



POWER SYSTEMS NETWORK MANAGEMENT
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD.,
414, AL-KHARJ ROAD
SECOND INDUSTRIAL CITY
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company
CLIENT : National Grid SA
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY
SUBSTATION : S/S 8709
CONTRACT NO. : 11131113/00
TITLE : Assembly Drawing - +R03.1 [Under Ground Feeder]

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

			DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

COVER SHEET

132kV UGF-8710 RELAY PANEL-1 +R03.1
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



نقل الكهرباء
National Grid SA

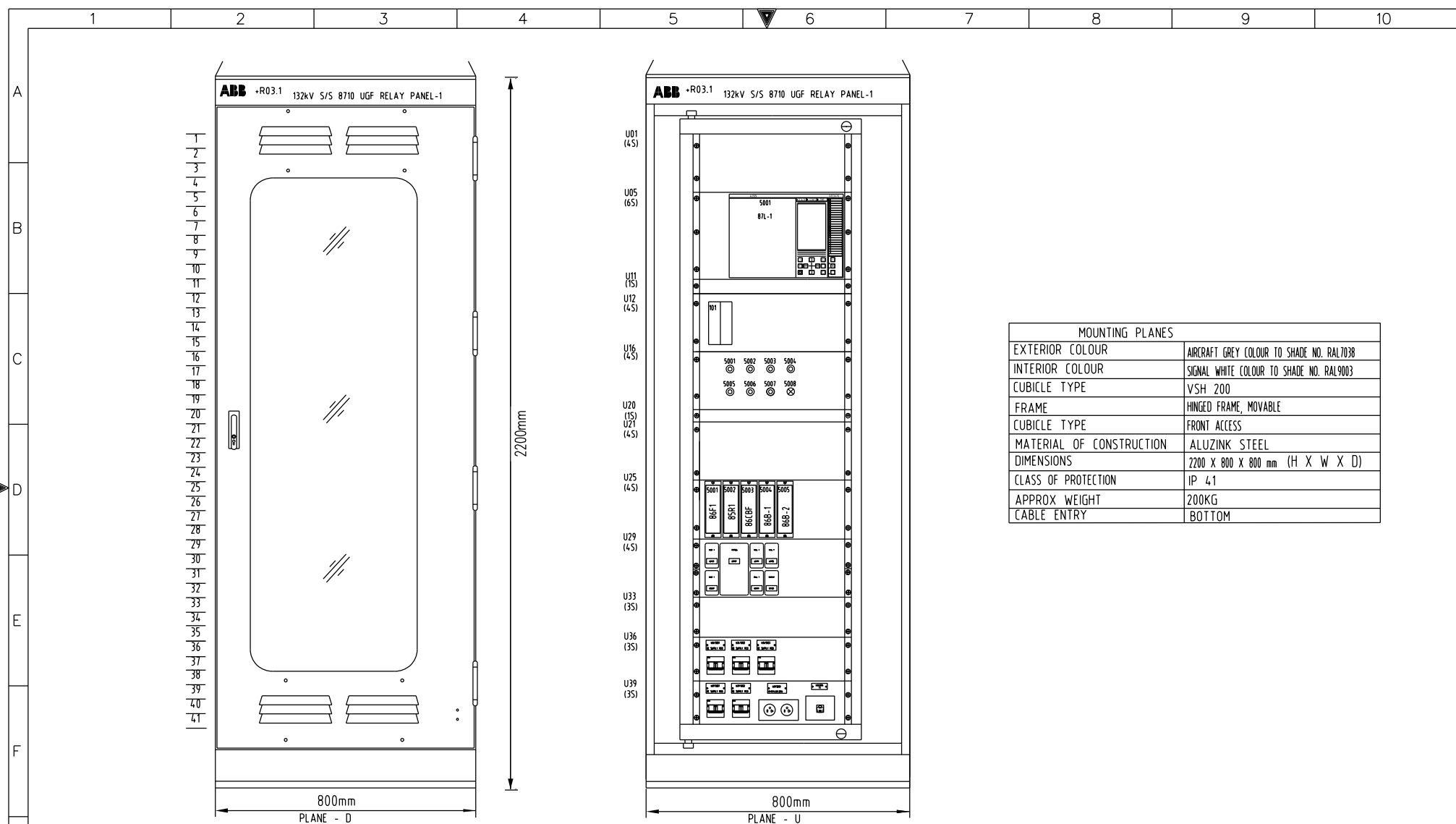
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322917	SHT 1 CONT.	00
			G00 G01	

NG/D2-D (2012/01)

DMS

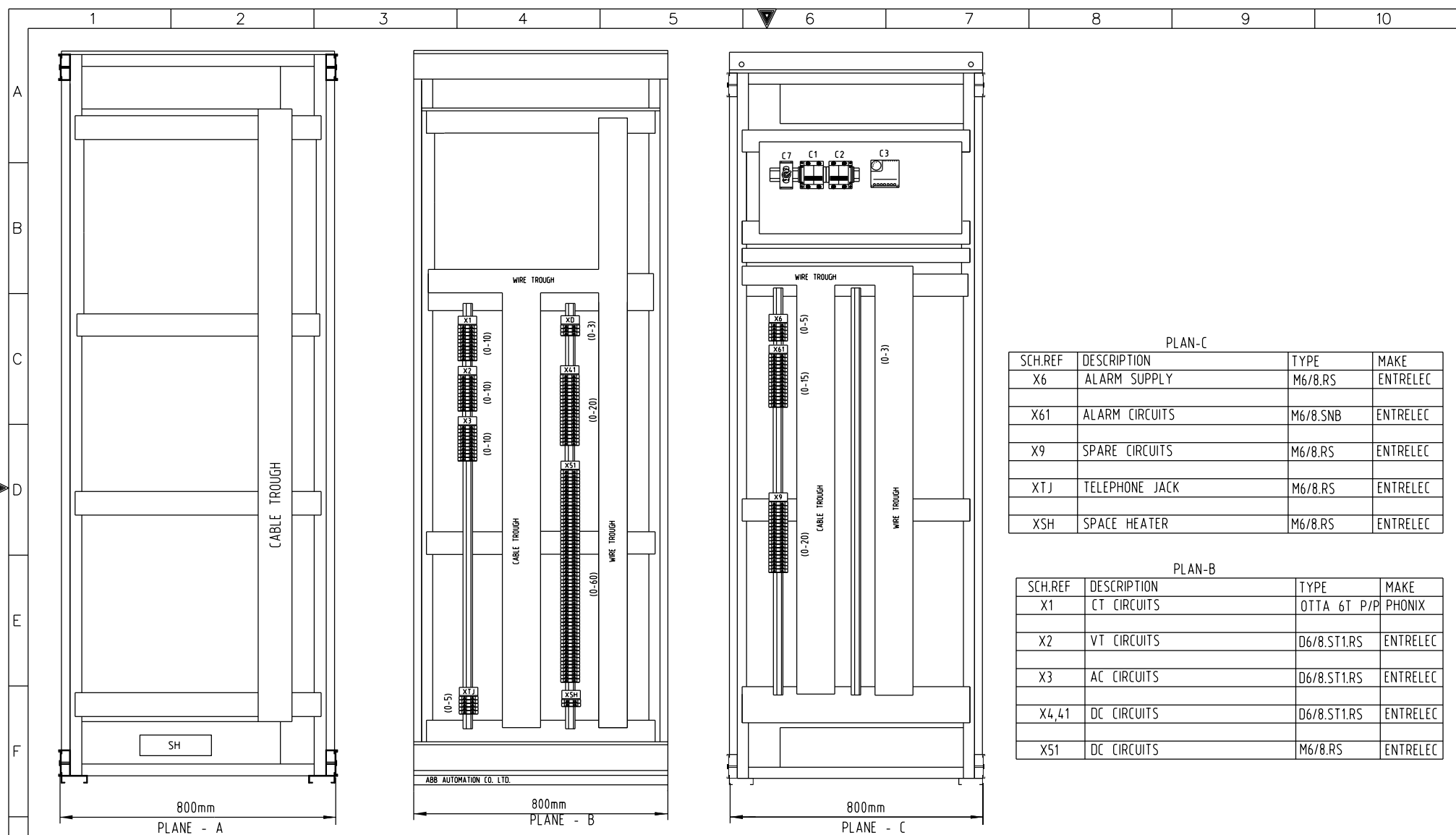
VECTOR

NGD200



MOUNTING PLANES	
EXTERIOR COLOUR	AIRCRAFT GREY COLOUR TO SHADE NO. RAL7038
INTERIOR COLOUR	SIGNAL WHITE COLOUR TO SHADE NO. RAL9003
CUBICLE TYPE	VSH 200
FRAME	HINGED FRAME, MOVABLE
CUBICLE TYPE	FRONT ACCESS
MATERIAL OF CONSTRUCTION	ALUZINK STEEL
DIMENSIONS	2200 X 800 X 800 mm (H X W X D)
CLASS OF PROTECTION	IP 41
APPROX WEIGHT	200KG
CABLE ENTRY	BOTTOM

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء National Grid SA			
DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 24.01.2013 DATE COMPLETED _____		132kV UGF-8710 RELAY PANEL-1 +R03.1		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
DATE STARTED 24.01.2013 DATE COMPLETED _____		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-	C421	CD-322917	SHT 1 CONT.
PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		FOR APPROVAL		RIYADH SAUDI ARABIA		CD-322917		G01 G02	
REV. NO.	DATE	DESCRIPTION							
00	13 04								



PLAN-C

SCH.REF	DESCRIPTION	TYPE	MAKE
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X61	ALARM CIRCUITS	M6/8.SNB	ENTRELEC
X9	SPARE CIRCUITS	M6/8.RS	ENTRELEC
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

PLAN-B

SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/P	PHONIX
X2	VT CIRCUITS	D6/8.ST1.RS	ENTRELEC
X3	AC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X4,41	DC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X51	DC CIRCUITS	M6/8.RS	ENTRELEC

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

G			DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>
			DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____
			OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>
	00	13 04	FOR APPROVAL
	REV. NO.	DATE	DESCRIPTION

ASSEMBLY DRAWING

132kV UGF-8710 RELAY PANEL-1 +R03.1
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

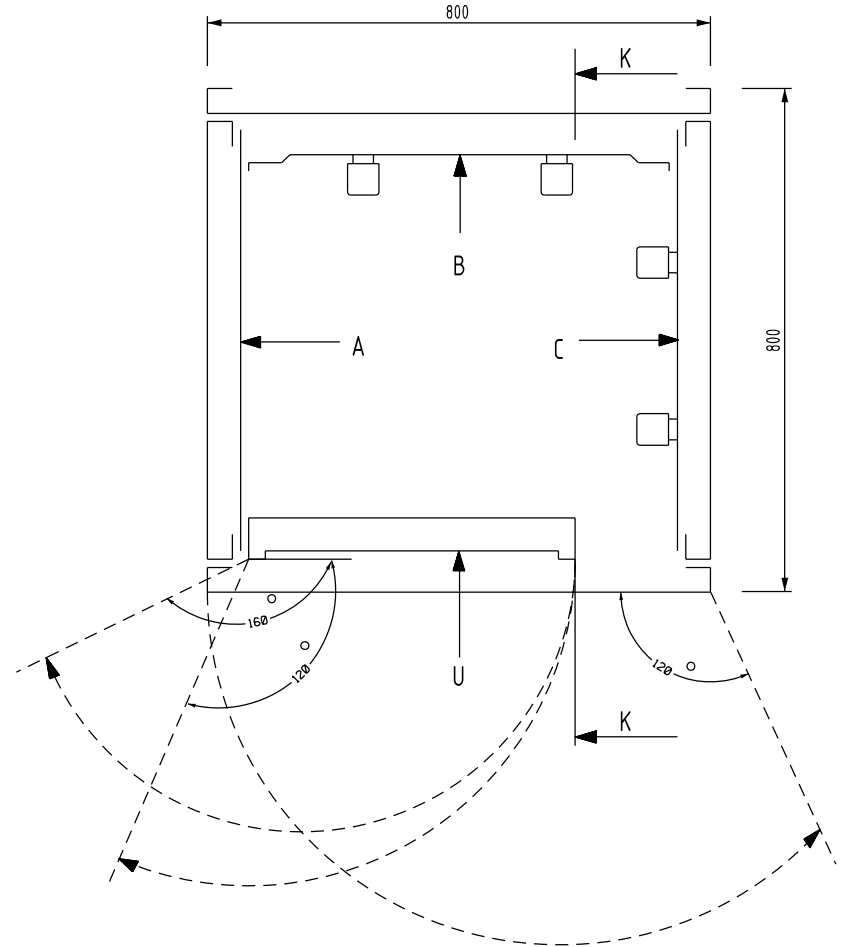
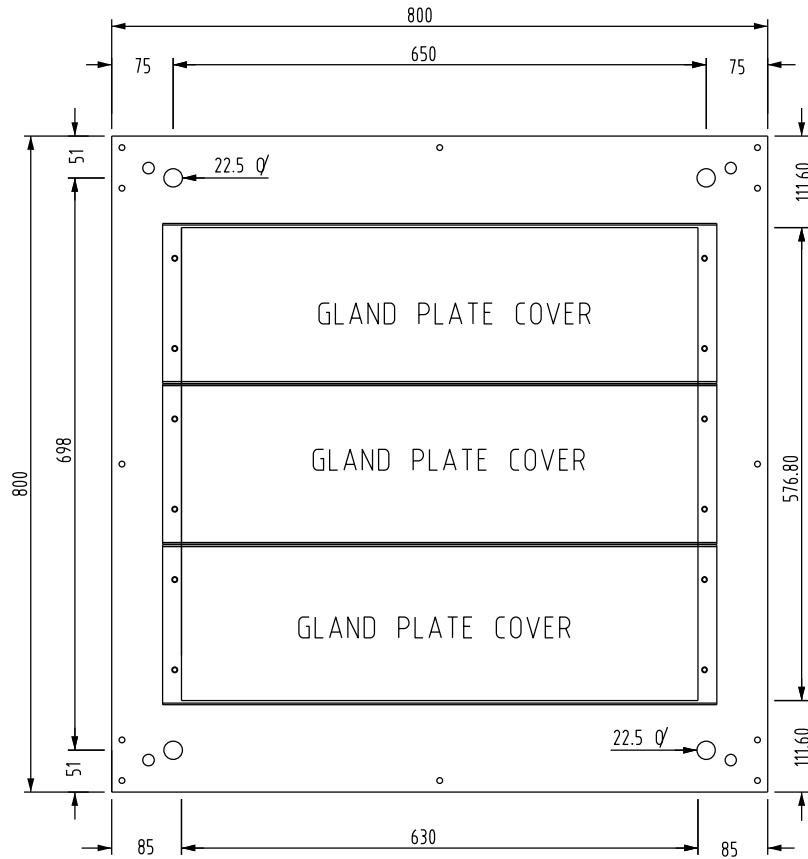


INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322917	G02 G03	00

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

BASE PLATE/
FOUNDATION

PLAN



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

ASSEMBLY DRAWING

الشركة الوطنية لنقل الكهرباء

نقل الكهرباء
National Grid SA

REV. NO.	DATE	DESCRIPTION
00	13 04	FOR APPROVAL

DRAWN BY RIZ	CHECKED BY KVR
DATE STARTED 24.01.2013	DATE COMPLETED
OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

132kV UGF-8710 RELAY PANEL-1 +R03.1
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322917	G03 G04	00

NG/D2-D (2012/01)

DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										

TOP VIEW FOR EARTHING BAR

U PLANE TOP LABEL

+R03.1 132kV SS 8710 UG FEEDER RELAY PANEL-1

800

28

U PLANE BOTTOM LABEL

ABB AUTOMATION CO. LTD

800

28

MANUFACTURING LABEL

ABB ABB Automation Co.Ltd.

PROJECT : National Grid SA
S/S 8709

ORDER REFERENCE : 2875 RF S13656





YEAR OF MANUFACTURE : 2013

PANEL NO. : +R03.1

DRAWING NO. : S13656-CD-323919

MADE IN THE KINGDOM OF SAUDI ARABIA

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء National Grid SA				
		DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-8710 RELAY PANEL-1 +R03.1		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
		DATE STARTED 24.01.2013	DATE COMPLETED	S/S 8709-132/13.8KV IN AL-KHARJ CITY					SHT 1 CONT.	
00 13 04 FOR APPROVAL		OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA		-	C421	CD-322917	G04 L00	00
REV. NO.	DATE	DESCRIPTION								

	1	2	3	4	5	6	7	8	9	10																																																																																																												
A						POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																																																																											
B																																																																																																																						
C	CONTRACTOR : ABB Contracting Company																																																																																																																					
	CLIENT : National Grid SA																																																																																																																					
D	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY																																																																																																																					
	SUBSTATION : S/S 8709																																																																																																																					
E	CONTRACT NO. : 11131113/00																																																																																																																					
F	TITLE : LIST OF APPARATUS +R03.1 [Under Ground Feeder]																																																																																																																					
G	<table><tr><td colspan="3">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. S-13656</td><td colspan="3">COVER SHEET</td><td colspan="2"> الشركة الوطنية لنقل الكهرباء National Grid SA</td></tr><tr><td colspan="3"></td><td colspan="2">DRAWN BY RIZ</td><td colspan="2">CHECKED BY KVR</td><td colspan="3">132kV UGF-8710 RELAY PANEL-1 +R03.1</td><td colspan="2">INDEX</td></tr><tr><td colspan="3"></td><td colspan="2">DATE STARTED 24.01.2013</td><td colspan="2">DATE COMPLETED</td><td colspan="3">S/S 8709-132/13.8KV IN AL-KHARJ CITY</td><td colspan="2">PLANT NO.</td></tr><tr><td colspan="3">00</td><td colspan="2">13 04</td><td colspan="2">FOR APPROVAL</td><td colspan="3">RIYADH SAUDI ARABIA</td><td colspan="2">DRAWING NUMBER</td></tr><tr><td colspan="3">REV. NO.</td><td colspan="2">DATE</td><td colspan="2">DESCRIPTION</td><td colspan="3"></td><td colspan="2">SHEET NO.</td></tr><tr><td colspan="3"></td><td colspan="2"></td><td colspan="2"></td><td colspan="3"></td><td colspan="2">SHT CONT.</td></tr><tr><td colspan="3"></td><td colspan="2"></td><td colspan="2"></td><td colspan="3"></td><td colspan="2">L00 L01</td></tr><tr><td colspan="3"></td><td colspan="2"></td><td colspan="2"></td><td colspan="3"></td><td colspan="2">REV. NO.</td></tr><tr><td colspan="3"></td><td colspan="2"></td><td colspan="2"></td><td colspan="3"></td><td colspan="2">00</td></tr></table>										AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COVER SHEET			 الشركة الوطنية لنقل الكهرباء National Grid SA					DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1			INDEX					DATE STARTED 24.01.2013		DATE COMPLETED		S/S 8709-132/13.8KV IN AL-KHARJ CITY			PLANT NO.		00			13 04		FOR APPROVAL		RIYADH SAUDI ARABIA			DRAWING NUMBER		REV. NO.			DATE		DESCRIPTION					SHEET NO.												SHT CONT.												L00 L01												REV. NO.												00	
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COVER SHEET			 الشركة الوطنية لنقل الكهرباء National Grid SA																																																																																																												
			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1			INDEX																																																																																																												
			DATE STARTED 24.01.2013		DATE COMPLETED		S/S 8709-132/13.8KV IN AL-KHARJ CITY			PLANT NO.																																																																																																												
00			13 04		FOR APPROVAL		RIYADH SAUDI ARABIA			DRAWING NUMBER																																																																																																												
REV. NO.			DATE		DESCRIPTION					SHEET NO.																																																																																																												
										SHT CONT.																																																																																																												
										L00 L01																																																																																																												
										REV. NO.																																																																																																												
										00																																																																																																												

NG/D2-D (2012/01)

DMS

VECTOR

NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

	1	2	3	4	5	6	7	8	9	10	
A	SR. NO.	GA. REF.	SCH. REF.	DESCRIPTION		SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
	13	U29.101	74R1/74T1	DUAL COIL RELAY FOR R1 DC /74T1 DC		232,233	2	RXSF 1	ABB	RK 271 019-AN	SWEDEN
		U29.301	74RS/74IS	AUXILIARY VOLTAGE : 110-125VDC		277					
				CONTACT DATA : 1NO + 2NC PER COIL							
B	14	U29.107	K01M	BISTABLE RELAY		232	1	RXMVB 4	ABB	RK 251 401-AP	SWEDEN
				AUXILIARY VOLTAGE : 125V DC							
				CONTACT DATA : 7NC+7NO							
C	15	U29.119	TMR/86F1	DELAY FOR PICKUP RELAY		232	3	RXKL1	ABB	1MR 000 006-AB	SWEDEN
		U29.319	TMR/86B-1	AUXILIARY VOLTAGE : 24-250V DC		276					
		U29.125	TMR/86B-2	CONTACT DATA : 2C/O		277					
D	16	U29.325	R1	RESISTOR UNIT FOR TCS		291	1	RXTMA1	ABB	RK 711 008-AF	SWEDEN
				RESISTOR WATT : 6.8 K OHMS							
E											
F											

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid SA					
			DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-8710 RELAY PANEL-1 +R03.1		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
			DATE STARTED 24.01.2013	DATE COMPLETED _____	S/S 8709-132/13.8KV IN AL-KHARJ CITY					SHT CONT.		
	00	13 04	FOR APPROVAL		OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH	SAUDI ARABIA	-	C421	CD-322917	L03 L04

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

	1	2	3	4	5	6	7	8	9	10	
A	SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N		SHEET NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
	17			MCB 2 POLE 6A FOR DC SUPPLY WITH 2NC AUXILIARY CONTACT		216	5	S282UC-K6 S2-H02	ABB	GH S282 0164 R0317 GH S270 1916 R0003	GERMANY
		U39.5001	Q1	R1 ₊ SUPPLY							
		U39.5002	Q2	IT1 ₊ SUPPLY							
		U36.5001	Q3	RS ₊ SUPPLY							
		U36.5002	Q4	IS ₊ SUPPLY							
B		U36.5003	Q5	TC1 ₊ SUPPLY							
	18	U39.5003	C01	CONVENIENCE OUTLET 10A, 127V AC		211	1	USM45 & USMS45	LEGRAND	74140 & 74180	FRANCE
			C02	CONVENIENCE OUTLET 10A, 220V AC							
	19		C1,C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS		211	2	S202-K10 S2C-H11L	ABB	2CDS 252 001 R0427 2CDS 270 1917 R0001	SWEDEN
	20		C3	THERMOSTAT FOR SPACE HEATER, 5-60 °C		211	1	SK 3110	RITTAL	SK 3110	
	21	U39.5004	TJ	TELEPHONE JACK 1GANG 4WIRE		211	1	EDF410	EDISON	EDF410	THIWAN
C	22		C7	ON/OFF SWITCH FOR SPACE HEATER		211	1	M2SS1-10B MCBH-10	ABB	1SFA 611 200 R1006 1SFA 611 605 R1101	SWEDEN
	23		DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP		211	1	LS30P	ABB	1SBV 010213 R1202	SWEDEN
	24		IL	INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V AC, 60Hz SUPPLY, 20W		211	1	T-4	SUNON	SP-20W	
	25		SH	SPACE HEATER, 150W, 120V, 60Hz		211	1	RICA	GRUPPO	1FZEK 006 C001	ITALY
D											
E											
F											

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء نقل الكهرباء National Grid SA	
		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1		INDEX		PLANT NO.	
		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		DRAWING NUMBER		SHEET NO.	
00 13 04		FOR APPROVAL		RIYADH SAUDI ARABIA		CD-322917		L04L05	
REV. NO.		DATE		DESCRIPTION		- C421		00	
				OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC					

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

	1	2	3	4	5	▼ 6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										

LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
U05.5001	U05.5001 87L-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U12.101	U12.101 TS-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X15mm	4mm
U16.5001	U16.5001 S86F1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5002	U16.5002 S86CBF	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5003	U16.5003 S86B-1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5004	U16.5004 S86B-2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	3mm
U16.5005	U16.5005 LT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U16.5006	U16.5006 S01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5007	U16.5007 S02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U16.5008	U16.5008 L01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U25.5001	U25.5001 86F1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U25.5002	U25.5002 85R1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U25.5003	U25.5003 86CBF	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U25.5004	U25.5004 86B-1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U25.5005	U25.5005 86B-2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U29.101	U29.101 74R1/74IT1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.301	U29.301 74RS/74IS	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.107	U29.107 K01M	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.119	U29.307 TMR/86BF1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.319	U29.319 TMR/86B-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.125	U29.125 TMR/86B-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.325	U29.325 R1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.131	U29.131 R2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	LIST OF APPARATUS		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid SA									
		DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		132kV UGF-8710 RELAY PANEL-1 +R03.1		INDEX -		PLANT NO. C421		DRAWING NUMBER CD-322917		SHEET NO. SHT 1 CONT. L06 L07		REV. NO. 00	
		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY											
00 13 04 FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA											

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

1	2	3	4	5	▼ 6	7	8	9	10																																																																																										
A	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>LABEL REF.</th> <th>LABEL ENGRAVING</th> <th>MATERIALS</th> <th>ENGRAVING</th> <th>LABEL SIZE</th> <th>LETTER SIZE</th> </tr> <tr> <td>C1</td> <td>C1 127V AC SUPPLY MCB</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>C2</td> <td>C2 220V AC SUPPLY MCB</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>C3</td> <td>C3 THERMOSTAT</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>C7</td> <td>C7 ON/OFF SWITCH</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>DS</td> <td>DS DOOR SWITCH</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>IL</td> <td>IL ILLUMINATION LAMP</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>SH</td> <td>SH SPACE HEATER</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>U39.5001</td> <td>U39.5001 01</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>U39.5002</td> <td>U39.5002 02</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>U39.5003</td> <td>U39.5003 03/02</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>U39.5004</td> <td>U39.5004 04</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>U36.5001</td> <td>U36.5001 03</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>U36.5002</td> <td>U36.5002 04</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>U36.5003</td> <td>U36.5003 05</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> </table>									LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE	C1	C1 127V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	C2	C2 220V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	C3	C3 THERMOSTAT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	C7	C7 ON/OFF SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	DS	DS DOOR SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	IL	IL ILLUMINATION LAMP	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	SH	SH SPACE HEATER	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	U39.5001	U39.5001 01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	U39.5002	U39.5002 02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	U39.5003	U39.5003 03/02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	U39.5004	U39.5004 04	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	U36.5001	U36.5001 03	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	U36.5002	U36.5002 04	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	U36.5003	U36.5003 05	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
LABEL REF.										LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE																																																																																					
C1										C1 127V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																					
C2										C2 220V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																					
C3										C3 THERMOSTAT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																					
C7										C7 ON/OFF SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																					
DS										DS DOOR SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																					
IL										IL ILLUMINATION LAMP	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																					
SH										SH SPACE HEATER	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																					
U39.5001										U39.5001 01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																					
U39.5002										U39.5002 02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																					
U39.5003										U39.5003 03/02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																					
U39.5004										U39.5004 04	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																					
U36.5001										U36.5001 03	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																					
U36.5002	U36.5002 04	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																														
U36.5003	U36.5003 05	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																														
B																																																																																																			
C																																																																																																			
D																																																																																																			
E																																																																																																			
F																																																																																																			
G	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2">AS-BUILT BY _____ DATE _____</td> <td>CONTRACT NO. 11131113/00</td> <td>JOB ORDER NO. S-13656</td> </tr> <tr> <td colspan="2" rowspan="2"> <div style="display: flex; justify-content: space-between;"> <div> REV. NO. 00 DATE 13 04 </div> <div> DESCRIPTION FOR APPROVAL </div> </div> </td> <td colspan="2"> DRAWN BY RIZ CHECKED BY KVR DATE STARTED 24.01.2013 DATE COMPLETED _____ OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC </td> </tr> </table>	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	<div style="display: flex; justify-content: space-between;"> <div> REV. NO. 00 DATE 13 04 </div> <div> DESCRIPTION FOR APPROVAL </div> </div>		DRAWN BY RIZ CHECKED BY KVR DATE STARTED 24.01.2013 DATE COMPLETED _____ OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="2">LIST OF APPARATUS</th> </tr> <tr> <td colspan="2">132kV UGF-8710 RELAY PANEL-1 +R03.1</td> </tr> <tr> <td colspan="2">S/S 8709-132/13.8KV IN AL-KHARJ CITY</td> </tr> <tr> <td colspan="2">RIYADH SAUDI ARABIA</td> </tr> </table>	LIST OF APPARATUS		132kV UGF-8710 RELAY PANEL-1 +R03.1		S/S 8709-132/13.8KV IN AL-KHARJ CITY		RIYADH SAUDI ARABIA		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;"> الشركة الوطنية لنقل الكهرباء نقل الكهرباء National Grid SA </td> </tr> <tr> <td>INDEX -</td> <td>PLANT NO. C421</td> </tr> <tr> <td colspan="2">DRAWING NUMBER CD-322917</td> </tr> <tr> <td>SHEET NO. L07</td> <td>CONT. NIL</td> </tr> <tr> <td>REV. NO. 00</td> <td></td> </tr> </table>	الشركة الوطنية لنقل الكهرباء نقل الكهرباء National Grid SA		INDEX -	PLANT NO. C421	DRAWING NUMBER CD-322917		SHEET NO. L07	CONT. NIL	REV. NO. 00																																																																							
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656																																																																																																
<div style="display: flex; justify-content: space-between;"> <div> REV. NO. 00 DATE 13 04 </div> <div> DESCRIPTION FOR APPROVAL </div> </div>		DRAWN BY RIZ CHECKED BY KVR DATE STARTED 24.01.2013 DATE COMPLETED _____ OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC																																																																																																	
		LIST OF APPARATUS																																																																																																	
132kV UGF-8710 RELAY PANEL-1 +R03.1																																																																																																			
S/S 8709-132/13.8KV IN AL-KHARJ CITY																																																																																																			
RIYADH SAUDI ARABIA																																																																																																			
الشركة الوطنية لنقل الكهرباء نقل الكهرباء National Grid SA																																																																																																			
INDEX -	PLANT NO. C421																																																																																																		
DRAWING NUMBER CD-322917																																																																																																			
SHEET NO. L07	CONT. NIL																																																																																																		
REV. NO. 00																																																																																																			

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



POWER SYSTEMS NETWORK MANAGEMENT
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD.,
414, AL-KHARJ ROAD
SECOND INDUSTRIAL CITY
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company
CLIENT : National Grid SA
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY
SUBSTATION : S/S 8709
CONTRACT NO. : 11131113/00
TITLE : Assembly Drawing +R03.2 [Under Ground Feeder]

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

COVER SHEET

الشركة الوطنية لنقل الكهرباء



132kV UGF-8710 RELAY PANEL-2 +R03.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322918	SHT 1 CONT. G001	00

00 13 04

FOR APPROVAL

DRAWN BY RIZ CHECKED BY KVR

DATE STARTED 24.01.2013 DATE COMPLETED

OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

REV. NO.

DATE

DESCRIPTION

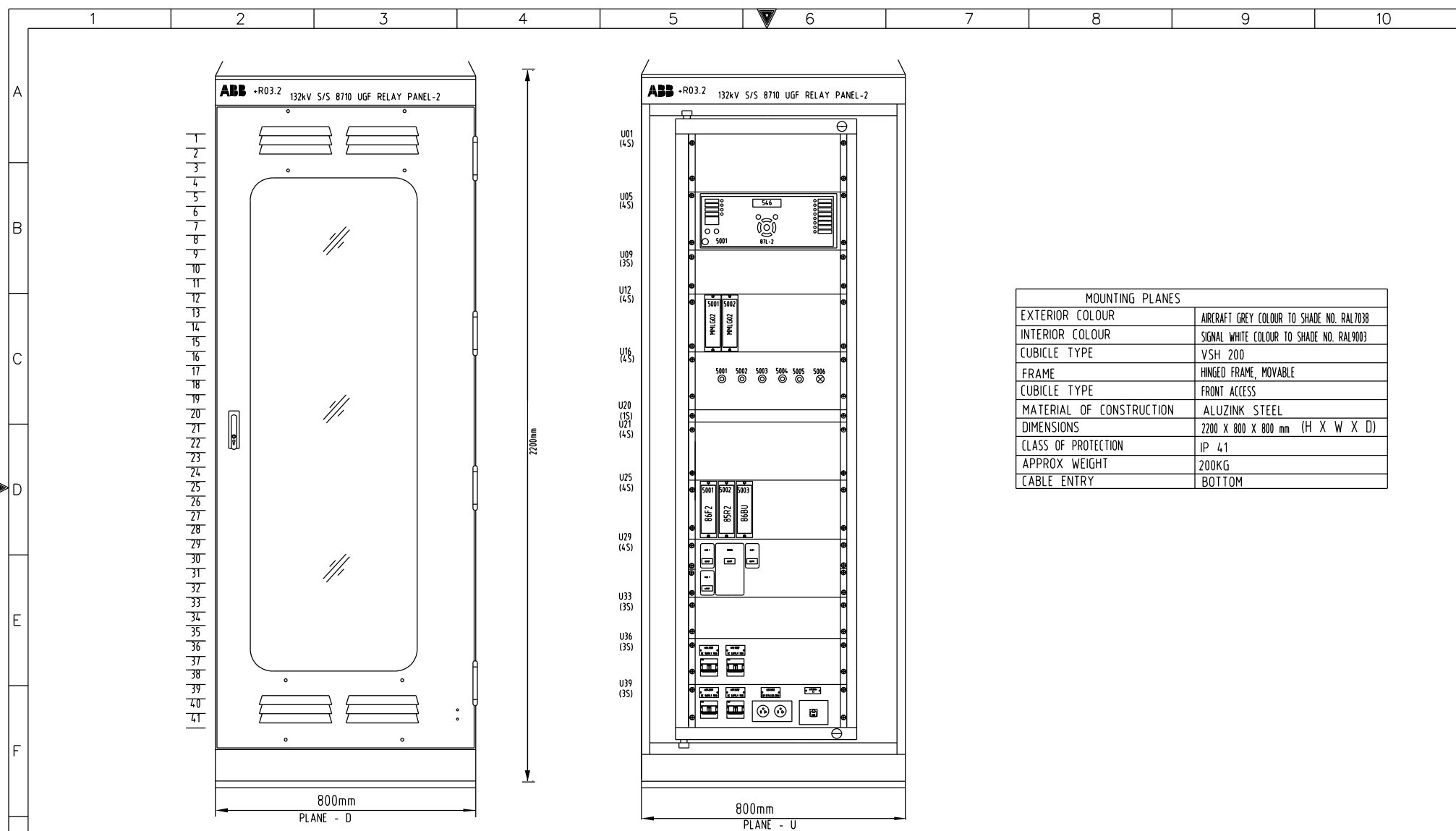
NG/D2-D (2012/01)

DMS

VECTOR

NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



MOUNTING PLANES	
EXTERIOR COLOUR	AIRCRAFT GREY COLOUR TO SHADE NO. RAL7038
INTERIOR COLOUR	SIGNAL WHITE COLOUR TO SHADE NO. RAL9003
CUBICLE TYPE	VSH 200
FRAME	HINGED FRAME, MOVABLE
CUBICLE TYPE	FRONT ACCESS
MATERIAL OF CONSTRUCTION	ALUZINK STEEL
DIMENSIONS	2200 X 800 X 800 mm (H X W X D)
CLASS OF PROTECTION	IP 41
APPROX. WEIGHT	200KG
CABLE ENTRY	BOTTOM

AS-BUILT BY _____ DATE _____

CONTRACT NO. 11131113/00

JOB ORDER NO. S-13656

ASSEMBLY DRAWING

132kV UGF-8710 RELAY PANEL-2 +R03.2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

INDEX

PLANT NO.

DRAWING NUMBER

SHEET NO.

REV. NO.

-

C421

CD-322918

G01 | G02

00

00

13 04

FOR APPROVAL

DRAWN BY _____ RIZ _____ CHECKED BY _____ KVR _____

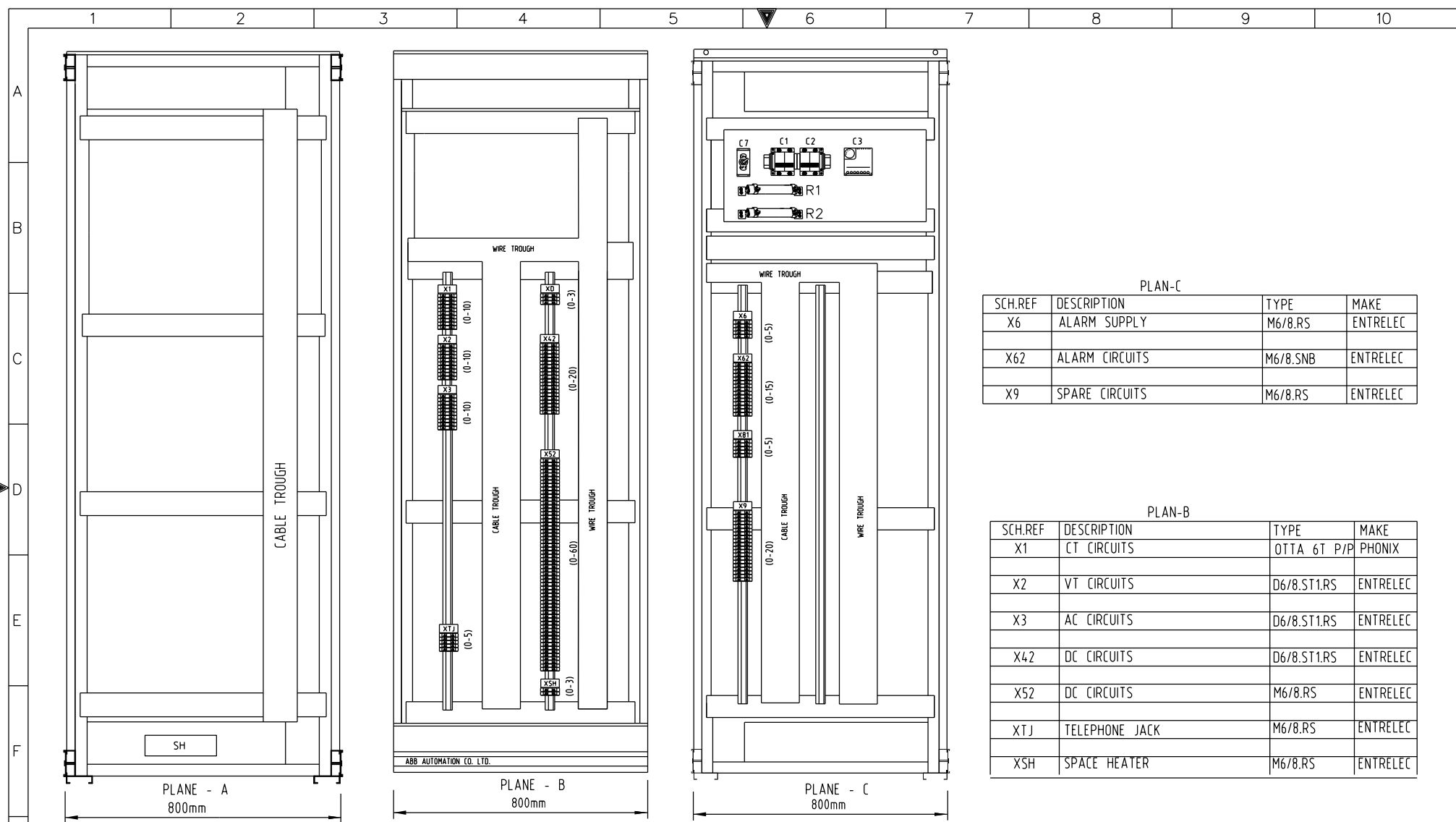
DATE STARTED 24.01.2013 DATE COMPLETED _____

OPRG. DEPT. _____ CTPD _____ ENG. DEPT. _____ AUT-PSAC _____

الشركة الوطنية لنقل الكهرباء

National Grid sa

نقل الكهرباء



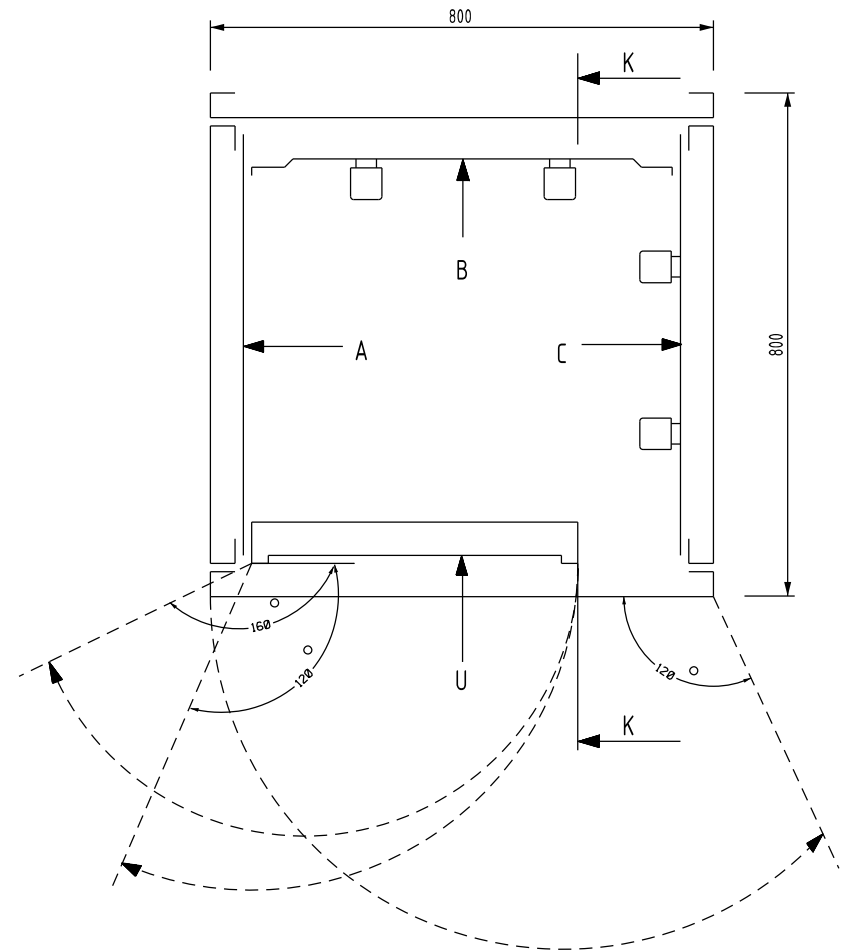
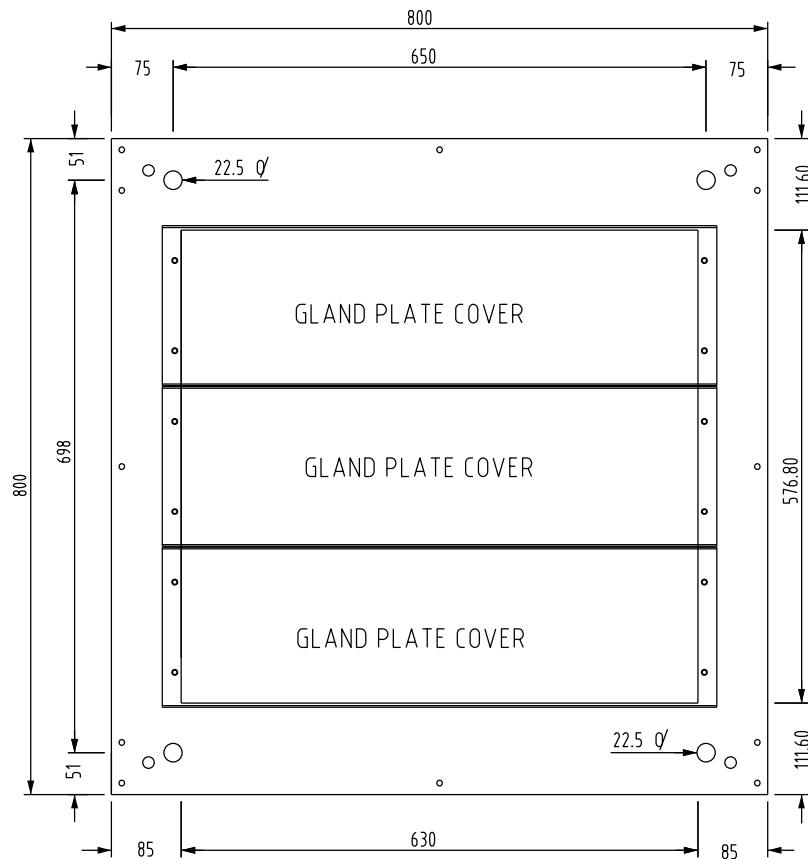
PLAN-C			
SCH.REF	DESCRIPTION	TYPE	MAKE
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X62	ALARM CIRCUITS	M6/8.SNB	ENTRELEC
X9	SPARE CIRCUITS	M6/8.RS	ENTRELEC

PLAN-B			
SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/P	PHONIX
X2	VT CIRCUITS	D6/8.ST1.RS	ENTRELEC
X3	AC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X42	DC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X52	DC CIRCUITS	M6/8.RS	ENTRELEC
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		National Grid SA		SHT ICONT.	
DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
PRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-322918	G02 G03
REV. NO.	DATE	DESCRIPTION							
00	13 04	FOR APPROVAL							

BASE PLATE/ FOUNDATION

PLAN



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

00	13 04	FOR APPROVAL	DRAWN BY RIZ CHECKED BY KVR
REV. NO.	DATE	DESCRIPTION	DATE STARTED 24.01.2013 DATE COMPLETED _____
			OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

ASSEMBLY DRAWING
132kV UGF-8710 RELAY PANEL-2 +R03.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322918	SHT 1 CONT. G03 G04	00

NG/D2-D (2012/01)
DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										

TOP VIEW FOR EARTHING BAR

U PLANE TOP LABEL

+R03.2 132kV SS 8710 UG FEEDER RELAY PANEL-2

800

28

U PLANE BOTTOM LABEL

ABB AUTOMATION CO. LTD

800

28

MANUFACTURING LABEL

ABB ABB Automation Co.Ltd.

PROJECT : National Grid SA S/S 8709

ORDER REFERENCE : 2875 RF S13656

YEAR OF MANUFACTURE : 2013

PANEL NO. : +R03.2

DRAWING NO. : S13656-CD-323919

MADE IN THE KINGDOM OF SAUDI ARABIA

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		National Grid SA					
00 13 04		DATE STARTED 24.01.2013 DATE COMPLETED		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
REV. NO. DATE DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-322918	SHT 1 CONT. G04 L00	00	



POWER SYSTEMS NETWORK MANAGEMENT
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD.,
414, AL-KHARJ ROAD
SECOND INDUSTRIAL CITY
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company
CLIENT : National Grid SA
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY
SUBSTATION : S/S 8709
CONTRACT NO. : 11131113/00
TITLE : LIST OF APPARATUS +R03.2 [Under Ground Feeder]

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

			DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

COVER SHEET

132kV UGF-8710 RELAY PANEL-2 +R03.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



نقل الكهرباء
National Grid SA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322918	SHT 1 CONT. L00 L01	00

NG/D2-D (2012/01)

DMS

VECTOR

NGD200

	1	2	3	4	5	6	7	8	9	10	
	SR. NO.	LOC. REF	SCH. REF.	D E S C R I P T I O N	SHT	QTY.	TYPE	MAKE	ORD INFORMATION	COUNRTY OF ORIGIN	
A				RELAY CUBICLE- +R03.2 ACCOMODATING THE FOLLOWING		1					
	1	U05.5001	87L-2	NUMERICAL HIGH SPEED CURRENT DISTANCE PROTECTION VERSION : 1 & 3 POLE TRIPPING/RECLOSING MHO/QUAD CHAR AUX : 110V-250V DC : 100-120V In/Vn : DUAL RATED CT (1/5A) HARDWARE : EHTHER NET (100mbits) PLUS irig-b modulated PRODUCT OPTION : CH1-1300nm SINGLE MODE CH2-1300nm SINGLE MODE PROTOCOL OPTION : IEC61850+COURIER VIA REAR RS485 PORT MOUNTING : 19" RACK,2A LOGICAL INPUTS,32 RELAY OUT PUTS LANGUAGE : ENGLISH SOFTWARE : 71	498	1	P546	ALSTOM	P546	UK	
	2	U12.5001	TS-1	TEST SWITCH FOR P546 RELAY	422	2	MMLG02	ALSTOM	MMLG02 R1AA 0001D	UK	
		U12.5002	TS-2								
	3	U16.5001	S03	PUSH BUTTON FOR FPSM IN_SELECTION BUTTON COLOUR : BLACK CONTACT DATA : 2NO	432	1	MP1-10B MCBH-20	ABB	1SFA 611 100 R1006 1SFA 611 605 R1102	SWEDEN	
	4	U16.5002	S04	PUSH BUTTON FOR FPSM OUT SELECTION BUTTON COLOUR : BLACK CONTACT DATA : 2NO	432	1	MP1-10B MCBH-20	ABB	1SFA 611 100 R1006 1SFA 611 605 R1102	SWEDEN	
	5	U16.5003	S86BU	PUSH BUTTON FOR 86BU RESET BUTTON COLOUR : BLACK CONTACT DATA : 2NO	443	1	MP1-10B MCBH-20	ABB	1SFA 611 100 R1006 1SFA 611 605 R1102	SWEDEN	
	6	U16.5004	S86F2	PUSH BUTTON FOR 86F2 RESET BUTTON COLOUR : BLACK CONTACT DATA : 2NO	432	1	MP1-10B MCBH-20	ABB	1SFA 611 100 R1006 1SFA 611 605 R1102	SWEDEN	
	7	U16.5005	LT	PUSH BUTTON FOR 86F2 RESET BUTTON COLOUR : BLACK CONTACT DATA : 2NO	431	1	MP1-10B MCBH-20	ABB	1SFA 611 100 R1006 1SFA 611 605 R1102	SWEDEN	
	8	U16.5006	L01	INDICATION LAMP OUT LENS : WHITE LENS RATING : 110-130V,4-6MA HOLDER RATING :130V WITH RESISTORS DIODE BLOCK	431	1	MC1-100W MCBH-003 KA2-2145	ABB	1SFA 611 400 R1003 1SFA 611 605 R1400 1SFA 616 921 R2145	SWEDEN	
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COVER SHEET				
			DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2				الشركة الوطنية لنقل الكهرباء		
			DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY				National Grid SA		
			OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA				National Grid SA		
REV. NO. 00		DATE 13 04		FOR APPROVAL		INDEX -		PLANT NO. C421		DRAWING NUMBER CD-322918	
								SHEET NO. L01		REV. NO. 00	

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.


	1	2	3	4	5	6	7	8	9	10																																																				
A																																																														
B																																																														
C																																																														
D																																																														
E																																																														
F																																																														
G																																																														
<table><tr><td colspan="2">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. S-13656</td><td colspan="2">LIST OF APPARATUS</td><td colspan="3"><div>الشركة الوطنية لنقل الكهرباء</div><div> نقل الكهرباء National Grid SA</div></td></tr><tr><td colspan="2"></td><td colspan="2">DRAWN BY RIZ</td><td colspan="2">CHECKED BY KVR</td><td colspan="2">132kV UGF-8710 RELAY PANEL-2 +R03.2</td><td>INDEX</td><td>PLANT NO.</td><td>DRAWING NUMBER</td><td>SHEET NO.</td><td>REV. NO.</td></tr><tr><td colspan="2">00</td><td colspan="2">13 04</td><td colspan="2">FOR APPROVAL</td><td colspan="2">DATE STARTED 24.01.2013 DATE COMPLETED</td><td colspan="2">S/S 8709-132/13.8KV IN AL-KHARJ CITY</td><td></td><td>SHT</td><td>CONT.</td></tr><tr><td colspan="2">REV. NO.</td><td colspan="2">DATE</td><td colspan="2">DESCRIPTION</td><td colspan="2">OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC</td><td colspan="2">RIYADH SAUDI ARABIA</td><td>-</td><td>C421</td><td>CD-322918</td><td>L03L04</td><td>00</td></tr></table>											AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid SA</div>					DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	00		13 04		FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED		S/S 8709-132/13.8KV IN AL-KHARJ CITY			SHT	CONT.	REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-322918	L03L04	00
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid SA</div>																																																						
		DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.																																																		
00		13 04		FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED		S/S 8709-132/13.8KV IN AL-KHARJ CITY			SHT	CONT.																																																		
REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-322918	L03L04	00																																																

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

	1	2	3	4	5	6	7	8	9	10			
A	SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N		SHEET NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN		
	15			MCB 2 POLE 6A, FOR DC SUPPLY WITH 2NC AUXILIARY CONTACT		416	2	S 282 UC-K6 S2-H02	ABB	GH S282 0164 R0377 GH S270 1916 R0003	GERMANY		
		U39.5001	01	Q1 R2+ SUPPLY									
		U39.5002	02	Q2 R3 + SUPPLY									
		U36.5001	03	Q3 IT2+ SUPPLY									
B		U36.5002	04	Q4 TC2 + SUPPLY									
	16	U39.5003	C01	CONVENIENCE OUTLET 10A, 127V AC		411	1	USM45 & USMS45	LEGRAND	74140 & 74180	FRANCE		
			C02	CONVENIENCE OUTLET 10A, 220V AC									
			C1,C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS		411	2	S202-C10 S2C-H11L	ABB	2CDS 253 001 R0104 2CDS 200 936 R0001	GERMANY		
	17		C3	THERMOSTAT FOR SPACE HEATER, 5-60 °C		411	1	SK 3110	RITTAL	SK 3110	THIWAN		
C	18	U39.5004	TJ	TELEPHONE JACK 1GANG 4WIRE		411	1	EDF410	EDISON	EDF410	SWEDEN		
	19		C7	ON/OFF SWITCH FOR SPACE HEATER		411	1	M2SS1-10B MCBH-10	ABB	1SFA 611 200 R1006 1SFA 611 605 R1101			
	20		DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP		411	1	LS30P	ABB	1SBV 010213 R1202	SWEDEN		
	21		IL	INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V AC, 60Hz SUPPLY, 20W		411	1	T-4	SUNON	SP-20W			
	22		SH	SPACE HEATER, 150W, 120V, 60Hz		411	1	MICA	GRUPPO	1FZEK 006 C001	ITALY		
D	23		R1	FIXED RESISTOR FOR TRIP CIRCUIT SUPERVISION CKT.		491	2	GRF 30/200	DANOTHERM	GRF 30/200	GERMANY		
			R2	2.5Kohm,15W									
E													
F													
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid SA				
			DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
	00 13 04		DATE STARTED 24.01.2013 DATE COMPLETED _____		RIYADH SAUDI ARABIA		-	C421	CD-322918	L04	L05	00	
	REV. NO. DATE DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC										

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid SA</div>	
		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		INDEX PLANT NO. DRAWING NUMBER		SHEET NO. REV. NO.	
00 13 04		DATE STARTED 24.01.2013 DATE COMPLETED		S/S 8709-132/13.8KV IN AL-KHARJ CITY		- C421 CD-322918		SHT ICONT. 00	
REV. NO. DATE DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA				L05 L06	

NG/D2-D (2012/01)
DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

	1	2	3	4	5	▼ 6	7	8	9	10																																																																																																																		
A																																																																																																																												
B																																																																																																																												
C																																																																																																																												
D																																																																																																																												
E																																																																																																																												
F																																																																																																																												
G	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:12.5%;">LABEL REF.</th> <th style="width:12.5%;">LABEL ENGRAVING</th> <th style="width:12.5%;">MATERIALS</th> <th style="width:12.5%;">ENGRAVING</th> <th style="width:12.5%;">LABEL SIZE</th> <th style="width:12.5%;">LETTER SIZE</th> </tr> </thead> <tbody> <tr><td>U05.5001</td><td>U05.5001 87L-2</td><td>ALUMINUM PAPER FOIL</td><td>BLACK LETTERS</td><td>50X10mm</td><td>3mm</td></tr> <tr><td>U12.5001</td><td>U12.5001 TS-1</td><td>ALUMINUM PAPER FOIL</td><td>BLACK LETTERS</td><td>50X15mm</td><td>4mm</td></tr> <tr><td>U12.5002</td><td>U12.5002 TS-2</td><td>ALUMINUM PAPER FOIL</td><td>BLACK LETTERS</td><td>50X15mm</td><td>4mm</td></tr> <tr><td>U16.5001</td><td>U16.5001 S03</td><td>TRAFOLITE</td><td>BLACK LETTERS ON WHITE BACKGROUND</td><td>50X15mm</td><td>4mm</td></tr> <tr><td>U16.5002</td><td>U16.5002 S04</td><td>TRAFOLITE</td><td>BLACK LETTERS ON WHITE BACKGROUND</td><td>50X15mm</td><td>4mm</td></tr> <tr><td>U16.5003</td><td>U16.5003 S86BU</td><td>TRAFOLITE</td><td>BLACK LETTERS ON WHITE BACKGROUND</td><td>50X15mm</td><td>4mm</td></tr> <tr><td>U16.5004</td><td>U16.5004 S86F2</td><td>TRAFOLITE</td><td>BLACK LETTERS ON WHITE BACKGROUND</td><td>50X10mm</td><td>3mm</td></tr> <tr><td>U16.5005</td><td>U16.5005 LT</td><td>TRAFOLITE</td><td>BLACK LETTERS ON WHITE BACKGROUND</td><td>50X10mm</td><td>4mm</td></tr> <tr><td>U16.5006</td><td>U16.5006 L01</td><td>TRAFOLITE</td><td>BLACK LETTERS ON WHITE BACKGROUND</td><td>50X10mm</td><td>4mm</td></tr> <tr><td>U25.5001</td><td>U25.5001 86F2</td><td>TRAFOLITE</td><td>BLACK LETTERS ON WHITE BACKGROUND</td><td>50X10mm</td><td>4mm</td></tr> <tr><td>U25.5002</td><td>U25.5002 85R2</td><td>TRAFOLITE</td><td>BLACK LETTERS ON WHITE BACKGROUND</td><td>50X10mm</td><td>4mm</td></tr> <tr><td>U25.5003</td><td>U25.5003 86BU</td><td>TRAFOLITE</td><td>BLACK LETTERS ON WHITE BACKGROUND</td><td>50X10mm</td><td>4mm</td></tr> <tr><td>U29.101</td><td>U29.101 74R2/74R3</td><td>ALUMINUM PAPER FOIL</td><td>BLACK LETTERS</td><td>50X10mm</td><td>3mm</td></tr> <tr><td>U29.107</td><td>U29.107 K01S</td><td>ALUMINUM PAPER FOIL</td><td>BLACK LETTERS</td><td>50X10mm</td><td>3mm</td></tr> <tr><td>U29.301</td><td>U29.301 TMR/86F2</td><td>ALUMINUM PAPER FOIL</td><td>BLACK LETTERS</td><td>50X10mm</td><td>3mm</td></tr> <tr><td>U29.125</td><td>U29.125 74IT2</td><td>ALUMINUM PAPER FOIL</td><td>BLACK LETTERS</td><td>50X10mm</td><td>3mm</td></tr> <tr><td>U29.119</td><td>U29.119 R1</td><td>ALUMINUM PAPER FOIL</td><td>BLACK LETTERS</td><td>50X10mm</td><td>3mm</td></tr> <tr><td>U29.319</td><td>U29.319 R2</td><td>ALUMINUM PAPER FOIL</td><td>BLACK LETTERS</td><td>50X10mm</td><td>3mm</td></tr> </tbody> </table>										LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE	U05.5001	U05.5001 87L-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm	U12.5001	U12.5001 TS-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X15mm	4mm	U12.5002	U12.5002 TS-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X15mm	4mm	U16.5001	U16.5001 S03	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	U16.5002	U16.5002 S04	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	U16.5003	U16.5003 S86BU	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	U16.5004	U16.5004 S86F2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	3mm	U16.5005	U16.5005 LT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm	U16.5006	U16.5006 L01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm	U25.5001	U25.5001 86F2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm	U25.5002	U25.5002 85R2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm	U25.5003	U25.5003 86BU	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm	U29.101	U29.101 74R2/74R3	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm	U29.107	U29.107 K01S	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm	U29.301	U29.301 TMR/86F2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm	U29.125	U29.125 74IT2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm	U29.119	U29.119 R1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm	U29.319	U29.319 R2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE																																																																																																																							
U05.5001	U05.5001 87L-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm																																																																																																																							
U12.5001	U12.5001 TS-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X15mm	4mm																																																																																																																							
U12.5002	U12.5002 TS-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X15mm	4mm																																																																																																																							
U16.5001	U16.5001 S03	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																																																							
U16.5002	U16.5002 S04	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																																																							
U16.5003	U16.5003 S86BU	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																																																							
U16.5004	U16.5004 S86F2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	3mm																																																																																																																							
U16.5005	U16.5005 LT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm																																																																																																																							
U16.5006	U16.5006 L01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm																																																																																																																							
U25.5001	U25.5001 86F2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm																																																																																																																							
U25.5002	U25.5002 85R2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm																																																																																																																							
U25.5003	U25.5003 86BU	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm																																																																																																																							
U29.101	U29.101 74R2/74R3	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm																																																																																																																							
U29.107	U29.107 K01S	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm																																																																																																																							
U29.301	U29.301 TMR/86F2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm																																																																																																																							
U29.125	U29.125 74IT2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm																																																																																																																							
U29.119	U29.119 R1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm																																																																																																																							
U29.319	U29.319 R2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm																																																																																																																							
AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656			LIST OF APPARATUS 132kV UGF-8710 RELAY PANEL-2 +R03.2 S/S 8709-132/13.8KV IN AL-KHARJ CITY RIYADH SAUDI ARABIA		<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid SA </div> </div>																																																																																																																							
DRAWN BY RIZ CHECKED BY KVR DATE STARTED 24.01.2013 DATE COMPLETED _____ OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO. - C421 CD-322918 L06 L07 00		NG/D2-D (2012/01) DMS VECTOR NGD200																																																																																																																							

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

1	2	3	4	5	▼ 6	7	8	9	10																																																																																															
A	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:10%;">LABEL REF.</th> <th style="width:20%;">LABEL ENGRAVING</th> <th style="width:10%;">MATERIALS</th> <th style="width:20%;">ENGRAVING</th> <th style="width:10%;">LABEL SIZE</th> <th style="width:10%;">LETTER SIZE</th> </tr> </thead> <tbody> <tr> <td>C1</td> <td>C1 127V AC SUPPLY MCB</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>C2</td> <td>C2 220V AC SUPPLY MCB</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>C3</td> <td>C3 THERMOSTAT</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>C7</td> <td>C7 ON/OFF SWITCH</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>D5</td> <td>D5 DOOR SWITCH</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>IL</td> <td>IL ILLUMINATION LAMP</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>SH</td> <td>SH SPACE HEATER</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>U39.5001</td> <td>U39.5001 01</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>U39.5002</td> <td>U39.5002 02</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>U39.5003</td> <td>U39.5003 01/C02</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>U39.5004</td> <td>U39.5004 1J</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>U36.5001</td> <td>U36.5001 03</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td>U36.5002</td> <td>U39.5002 04</td> <td>TRAFOLITE</td> <td>BLACK LETTERS ON WHITE BACKGROUND</td> <td>50X15mm</td> <td>4mm</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>									LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE	C1	C1 127V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	C2	C2 220V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	C3	C3 THERMOSTAT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	C7	C7 ON/OFF SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	D5	D5 DOOR SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	IL	IL ILLUMINATION LAMP	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	SH	SH SPACE HEATER	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	U39.5001	U39.5001 01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	U39.5002	U39.5002 02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	U39.5003	U39.5003 01/C02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	U39.5004	U39.5004 1J	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	U36.5001	U36.5001 03	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm	U36.5002	U39.5002 04	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm							B	C	D	E	F
LABEL REF.										LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE																																																																																										
C1										C1 127V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																										
C2										C2 220V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																										
C3										C3 THERMOSTAT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																										
C7										C7 ON/OFF SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																										
D5										D5 DOOR SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																										
IL										IL ILLUMINATION LAMP	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																										
SH										SH SPACE HEATER	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																										
U39.5001										U39.5001 01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																										
U39.5002	U39.5002 02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																																			
U39.5003	U39.5003 01/C02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																																			
U39.5004	U39.5004 1J	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																																			
U36.5001	U36.5001 03	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																																			
U36.5002	U39.5002 04	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm																																																																																																			
G	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2">AS-BUILT BY _____ DATE _____</td> <td>CONTRACT NO. 11131113/00</td> <td>JOB ORDER NO. S-13656</td> <td colspan="2" style="text-align: center;">LIST OF APPARATUS</td> <td colspan="3" rowspan="2" style="text-align: center;"> نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid SA </td> </tr> <tr> <td colspan="2"></td> <td colspan="2">DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u></td> <td colspan="2">132kV UGF-8710 RELAY PANEL-2 +R03.2</td> </tr> <tr> <td colspan="2"></td> <td colspan="2">DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____</td> <td colspan="2">S/S 8709-132/13.8KV IN AL-KHARJ CITY</td> <td>INDEX</td> <td>PLANT NO.</td> <td>DRAWING NUMBER</td> <td>SHEET NO.</td> <td>REV. NO.</td> </tr> <tr> <td colspan="2"></td> <td colspan="2">OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u></td> <td colspan="2">RIYADH SAUDI ARABIA</td> <td>-</td> <td>C421</td> <td>CD-322918</td> <td>SHT 1 CONT. L07/NIL</td> <td>00</td> </tr> </table>									AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	LIST OF APPARATUS		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid SA					DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		132kV UGF-8710 RELAY PANEL-2 +R03.2				DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.			OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		-	C421	CD-322918	SHT 1 CONT. L07/NIL	00																																																										
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	LIST OF APPARATUS		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid SA																																																																																																		
		DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		132kV UGF-8710 RELAY PANEL-2 +R03.2																																																																																																				
		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.																																																																																														
		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		-	C421	CD-322918	SHT 1 CONT. L07/NIL	00																																																																																														

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



POWER SYSTEMS NETWORK MANAGEMENT
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD.,
414, AL-KHARJ ROAD
SECOND INDUSTRIAL CITY
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company
CLIENT : National Grid SA
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY
SUBSTATION : S/S 8709
CONTRACT NO. : 11131113/00
TITLE : SCHEMATICS DRAWINGS (Under Ground Feeder)

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

			DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

COVER SHEET

132kV UGF-8710 RELAY PANEL-1/2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



نقل الكهرباء
National Grid SA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	SHT CONT. 000 001	00

NG/D2-D (2012/01)

DMS

VECTOR

NGD200

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										

CONTENTS		ABB SHT.NO.	REV.00	REV.01	REV.02
AC SUPPLY FOR ILLUMINATION & POWER SOCKET		411	X		
AC MCB AUX CONTACTS		412	X		
AC MCB AUX CONTACTS		416	X		
CURRENT TRANSFORMER INPUTS - 87L-2		421	X		
VOLTAGE TRANSFORMER INPUTS - 87L-2		422	X		
COMMUNICATION CIRCUIT - 87L2		423	X		
MAIN-2 PROT. 87L-2 RELAY BINARY INPUTS		431	X		
MAIN-2 DIFF. PROTECTION TRIP RELAY CKT.		432	X		
MAIN-2 INTERTRIP RELAY CKT.		433	X		
BACKUP PROTECTION TRIP RELAY CIRCUIT		443	X		
OPTICAL / ELECTRICAL INTERFACE		446	X		
MAIN-2 INDICATION CKT.		478	X		
TRIP COIL-2 SUPERVISION CIRCUIT		491	X		
TRIP COIL-1 & CBF INITIATION CONTACTS		492	X		
CLOSING CIRCUIT		493	X		
COMMON ALARM CIRCUITS		494	X		
SPARE CONTACTS		495	X		
BLOCK REFERENCE-87L-2		498	X		
BLOCK REFERENCE-87L-2		499	X		
TERMINAL BLOCKS REFERENCE +R03.2		501	X		

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CONTENTS SHEET		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid SA	
		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1/2					
		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.	
00 13 04 FOR APPROVAL		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		- C421		CD-322919	
REV. NO. DATE DESCRIPTION								SHEET NO. SHT ICONT. 002 011	
								REV. NO. 00	

NG/D2-D (2012/01)

DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

	1	2	3	4	5	6	7	8	9	10																																																																																																						
A																																																																																																																
B																																																																																																																
C																																																																																																																
D																																																																																																																
E																																																																																																																
F																																																																																																																
	<table><tr><th>SYMBOL</th><th>DESCRIPTION</th><th>SYMBOL</th><th>DESCRIPTION</th><th>SYMBOL</th><th>DESCRIPTION</th></tr><tr><td></td><td>FRAME CONNECTION</td><td></td><td>MAIN CONTACT OF A CIRCUIT BREAKER</td><td></td><td>RELAY WITH TWO MAKE CONTACTS, ONE OF THEM DELAYED WHEN OPERATING</td></tr><tr><td></td><td>EARTH CONNECTION</td><td></td><td>PASSING MAKE CONTACT CLOSING MOMENTARILY DURING OPERATION AND RELEASE</td><td></td><td>RELAY WITH TWO ACTUATORS AND A TWO STABLE POSITIONS</td></tr><tr><td></td><td>RESISTOR</td><td></td><td>BREAK CONTACT DELAYED WHEN OPERATING</td><td></td><td></td></tr><tr><td></td><td>VARIABLE RESISTOR</td><td></td><td>MAKE CONTACT DELAYED WHEN RELEASING</td><td></td><td>SIGNALLING LAMP</td></tr><tr><td></td><td>RESISTOR WITH PRESET ADJUSTMENT</td><td></td><td>TWO MECHANICAL LINKS CROSSING WITHOUT CONNECTION</td><td></td><td>MECHANICAL INDICATOR WITH AUTOMATIC RESET</td></tr><tr><td></td><td>CAPACITOR</td><td></td><td>JUNCTION OF MECHANICAL LINKS</td><td></td><td>MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET</td></tr><tr><td></td><td>SEMICONDUCTOR DIODE USED AS A CAPACITIVE DEVICE</td><td></td><td>AUTOMATIC RESET</td><td></td><td>ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET</td></tr><tr><td></td><td>OPEN CONTACT, MAKE CONTACT</td><td></td><td>NON-AUTOMATIC RESET</td><td></td><td>ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET</td></tr><tr><td></td><td>CHANGE-OVER CONTACT, BREAK BEFORE MAKE</td><td></td><td>SWITCHING DEVICE WITH MANUAL OPERATION AND WITH AUTOMATIC RESET</td><td></td><td>RELAY WITH MECHANICAL INDICATOR</td></tr><tr><td></td><td>MAKE CONTACT WHICH IS EARLY WHEN OPERATING AND LATE WHEN RELEASING</td><td></td><td>SWITCHING DEVICE WITH MANUAL OPERATION AND WITH NON-AUTOMATIC RESET</td><td></td><td>ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND ONE OPERATED POSITION</td></tr><tr><td></td><td>BREAK CONTACT WHICH IS LATE WHEN OPERATING AND EARLY WHEN RELEASING</td><td></td><td>CHANGE-OVER SWITCHING DEVICE WITH MANUAL CONTROL AUTOMATIC RESET FROM POSITION 1-2 TO THE NEUTRAL POSITION</td><td></td><td>ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND TWO OPERATED POSITIONS</td></tr><tr><td></td><td>SWITCHING DEVICE WITH MANUAL CONTROL</td><td></td><td>RELAY WITH MAKE CONTACT</td><td></td><td>BELL, BUZZER</td></tr><tr><td></td><td>MAKE CONTACT DELAYED WHEN OPERATING</td><td></td><td>RELAY WITH CHANGE-OVER CONTACT</td><td></td><td>SIREN , HORN</td></tr><tr><td></td><td>BREAK CONTACT DELAYED WHEN RELEASING</td><td></td><td>RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING</td><td></td><td></td></tr><tr><td></td><td>MAIN CONTACT OF A SWITCH DISCONNECTOR</td><td></td><td>RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING</td><td></td><td></td></tr><tr><td></td><td>MAIN CONTACT OF A DISCONNECTOR</td><td></td><td>RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING</td><td></td><td></td></tr></table>										SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION		FRAME CONNECTION		MAIN CONTACT OF A CIRCUIT BREAKER		RELAY WITH TWO MAKE CONTACTS, ONE OF THEM DELAYED WHEN OPERATING		EARTH CONNECTION		PASSING MAKE CONTACT CLOSING MOMENTARILY DURING OPERATION AND RELEASE		RELAY WITH TWO ACTUATORS AND A TWO STABLE POSITIONS		RESISTOR		BREAK CONTACT DELAYED WHEN OPERATING				VARIABLE RESISTOR		MAKE CONTACT DELAYED WHEN RELEASING		SIGNALLING LAMP		RESISTOR WITH PRESET ADJUSTMENT		TWO MECHANICAL LINKS CROSSING WITHOUT CONNECTION		MECHANICAL INDICATOR WITH AUTOMATIC RESET		CAPACITOR		JUNCTION OF MECHANICAL LINKS		MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET		SEMICONDUCTOR DIODE USED AS A CAPACITIVE DEVICE		AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET		OPEN CONTACT, MAKE CONTACT		NON-AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET		CHANGE-OVER CONTACT, BREAK BEFORE MAKE		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH AUTOMATIC RESET		RELAY WITH MECHANICAL INDICATOR		MAKE CONTACT WHICH IS EARLY WHEN OPERATING AND LATE WHEN RELEASING		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH NON-AUTOMATIC RESET		ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND ONE OPERATED POSITION		BREAK CONTACT WHICH IS LATE WHEN OPERATING AND EARLY WHEN RELEASING		CHANGE-OVER SWITCHING DEVICE WITH MANUAL CONTROL AUTOMATIC RESET FROM POSITION 1-2 TO THE NEUTRAL POSITION		ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND TWO OPERATED POSITIONS		SWITCHING DEVICE WITH MANUAL CONTROL		RELAY WITH MAKE CONTACT		BELL, BUZZER		MAKE CONTACT DELAYED WHEN OPERATING		RELAY WITH CHANGE-OVER CONTACT		SIREN , HORN		BREAK CONTACT DELAYED WHEN RELEASING		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING				MAIN CONTACT OF A SWITCH DISCONNECTOR		RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING				MAIN CONTACT OF A DISCONNECTOR		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION																																																																																																											
	FRAME CONNECTION		MAIN CONTACT OF A CIRCUIT BREAKER		RELAY WITH TWO MAKE CONTACTS, ONE OF THEM DELAYED WHEN OPERATING																																																																																																											
	EARTH CONNECTION		PASSING MAKE CONTACT CLOSING MOMENTARILY DURING OPERATION AND RELEASE		RELAY WITH TWO ACTUATORS AND A TWO STABLE POSITIONS																																																																																																											
	RESISTOR		BREAK CONTACT DELAYED WHEN OPERATING																																																																																																													
	VARIABLE RESISTOR		MAKE CONTACT DELAYED WHEN RELEASING		SIGNALLING LAMP																																																																																																											
	RESISTOR WITH PRESET ADJUSTMENT		TWO MECHANICAL LINKS CROSSING WITHOUT CONNECTION		MECHANICAL INDICATOR WITH AUTOMATIC RESET																																																																																																											
	CAPACITOR		JUNCTION OF MECHANICAL LINKS		MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET																																																																																																											
	SEMICONDUCTOR DIODE USED AS A CAPACITIVE DEVICE		AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET																																																																																																											
	OPEN CONTACT, MAKE CONTACT		NON-AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET																																																																																																											
	CHANGE-OVER CONTACT, BREAK BEFORE MAKE		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH AUTOMATIC RESET		RELAY WITH MECHANICAL INDICATOR																																																																																																											
	MAKE CONTACT WHICH IS EARLY WHEN OPERATING AND LATE WHEN RELEASING		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH NON-AUTOMATIC RESET		ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND ONE OPERATED POSITION																																																																																																											
	BREAK CONTACT WHICH IS LATE WHEN OPERATING AND EARLY WHEN RELEASING		CHANGE-OVER SWITCHING DEVICE WITH MANUAL CONTROL AUTOMATIC RESET FROM POSITION 1-2 TO THE NEUTRAL POSITION		ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND TWO OPERATED POSITIONS																																																																																																											
	SWITCHING DEVICE WITH MANUAL CONTROL		RELAY WITH MAKE CONTACT		BELL, BUZZER																																																																																																											
	MAKE CONTACT DELAYED WHEN OPERATING		RELAY WITH CHANGE-OVER CONTACT		SIREN , HORN																																																																																																											
	BREAK CONTACT DELAYED WHEN RELEASING		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING																																																																																																													
	MAIN CONTACT OF A SWITCH DISCONNECTOR		RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING																																																																																																													
	MAIN CONTACT OF A DISCONNECTOR		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING																																																																																																													
G	<table><tr><td colspan="3">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. I113I113/00</td><td colspan="2">JOB ORDER NO. S-13656</td><td colspan="3">GRAPHICAL SYMBOLS FOR DIAGRAMS</td><td rowspan="4"><div>الشركة الوطنية لنقل الكهرباء</div><div>نقل الكهرباء</div><div>National Grid SA</div></td></tr><tr><td colspan="3"></td><td colspan="2">DRAWN BY RIZ</td><td colspan="2">CHECKED BY KVR</td><td colspan="3">132kV UGF-8710 RELAY PANEL-1/2</td></tr><tr><td colspan="3"></td><td colspan="2">DATE STARTED 24.01.2013</td><td colspan="2">DATE COMPLETED _____</td><td colspan="3">S/S 8709-132/13.8KV IN AL-KHARJ CITY</td></tr><tr><td colspan="3"></td><td colspan="2">OPRG. DEPT. CTPD</td><td colspan="2">ENG. DEPT. AUT-PSAC</td><td colspan="3">RIYADH SAUDI ARABIA</td></tr><tr><td>REV. NO.</td><td>DATE</td><td>DESCRIPTION</td><td colspan="2">INDEX</td><td colspan="2">PLANT NO.</td><td colspan="2">DRAWING NUMBER</td><td colspan="2">SHEET NO.</td><td>REV. NO.</td></tr><tr><td>00</td><td>13 04</td><td>FOR APPROVAL</td><td colspan="2"></td><td colspan="2">C421</td><td colspan="2">CD-322919</td><td colspan="2">SHT 011</td><td>00</td></tr><tr><td></td><td></td><td></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2">CONT. 012</td><td></td></tr></table>										AS-BUILT BY _____ DATE _____			CONTRACT NO. I113I113/00		JOB ORDER NO. S-13656		GRAPHICAL SYMBOLS FOR DIAGRAMS			<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid SA</div>				DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1/2						DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY						OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA			REV. NO.	DATE	DESCRIPTION	INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	00	13 04	FOR APPROVAL			C421		CD-322919		SHT 011		00										CONT. 012																											
AS-BUILT BY _____ DATE _____			CONTRACT NO. I113I113/00		JOB ORDER NO. S-13656		GRAPHICAL SYMBOLS FOR DIAGRAMS			<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid SA</div>																																																																																																						
			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1/2																																																																																																									
			DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY																																																																																																									
			OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA																																																																																																									
REV. NO.	DATE	DESCRIPTION	INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.																																																																																																					
00	13 04	FOR APPROVAL			C421		CD-322919		SHT 011		00																																																																																																					
									CONT. 012																																																																																																							

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
		FUSE / LINK		WATTMETER		ELEMENT WITH NEGATED INHIBITING INPUT				
		FUSE WITH THE SUPPLY SIDE INDICATED		VARMETER		ELEMENT WITH INPUT WHICH DOES NOT CARRY ANY LOGIC INFORMATION				
		SINGLE-PHASE TRANSFORMER WITH TWO SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)		POWER FACTOR METER		ELEMENT WITH POSTPONED OUTPUT				
		SINGLE-PHASE TRANSFORMER WITH THREE SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)		POSITION INDICATOR		AND-ELEMENT WITH TWO INPUTS				
		SINGLE-PHASE TRANSFORMER WITH FERRO MAGNETIC CORE		SYNCHROSCOPE		OR-ELEMENT WITH TWO INPUTS				
		SINGLE-PHASE VOLTAGE TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		RECORDING VOLTMETER		LOGIC THRESHOLD ELEMENT WITH FOUR INPUTS AND THRESHOLD VALUE 2				
		SINGLE-PHASE VOLTAGE TRANSFORMER WITH TWO SECONDARY WINDINGS (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		RECORDING WATTMETER		ELEMENT WITH THREE INPUTS FOR "2 AND ONLY 2"				
		CURRENT TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		HOUR METER		EXCLUSIVE OR-ELEMENT WITH THREE INPUTS				
		CURRENT TRANSFORMER WITH TWO CORES (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		WATT-HOUR METER		LOGIC IDENTITY ELEMENT WITH THREE INPUTS				
		CURRENT TRANSFORMER WITH TWO SECONDARY WINDINGS ON ONE CORE (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		WATT-HOUR METER FOR ENERGY FROM A BUSBAR SYSTEM		MAJORITY ELEMENT WITH THREE INPUTS				
		FILTER		ELEMENT WITH STATIC INPUT		NEGATOR				
		HIGH-PASS FILTER		ELEMENT WITH STATIC NEGATED INPUT		NAND ELEMENT WITH TWO INPUTS				
		BAND-PASS FILTER		ELEMENT WITH STATIC NEGATED OUTPUT		NOR ELEMENT WITH TWO INPUTS				
		VOLTMETER		ELEMENT WITH DYNAMIC INPUT		BISTABLE ELEMENT				
		AMMETER		ELEMENT WITH DYNAMIC NEGATED INPUT						
				ELEMENT WITH INHIBITING INPUT						

G	AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		GRAPHICAL SYMBOLS FOR DIAGRAMS		الشركة الوطنية لنقل الكهرباء National Grid SA				
				DRAWN BY RIZ	CHECKED BY KVR			132kV UGF-8710 RELAY PANEL-1/2						
	00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED			S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC			RIYADH SAUDI ARABIA		-	C421	CD-322919	012 013	00

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										

LEGENDS

±R1	DC SUPPLY - MAIN PROTECTION
±R2	DC SUPPLY - SECONDARY PROTECTION
±R3	DC SUPPLY - BACK UP PROTECTION
±IT	DC SUPPLY - INTER TRIP
FL	DC SUPPLY - FLASHING CIRCUIT
BB RS±	DC SUPPLY - BUS BAR - PROTECTION RESET
BB CBF±/CBF±	DC SUPPLY - CBF PROTECTION
R	RESET BUS - ALARM SYSTEM
CR	CONTROL ROOM
ECC	ENERGY CONTROL CENTRE
LOCAL	THE LOCATION OF CONTROLLED DEVICE
REMOTE	ANY OTHER LOCATION NOT LOCAL
ON	CB NORMALLY OPEN AUXILIARY CONTACT
OFF	CB NORMALLY CLOSED AUXILIARY CONTACT
A	COMMON
T	TEST POSITION
S	SERVICE POSITION
CS	CLOSE IN SERVICE POSITION
CT	CLOSE IN TEST POSITION
LS	LOCAL SERVICE
LT	LOCAL TEST
LC	LOCAL CLOSE
LO	LOCAL OPEN
RO	REMOTE OPEN
OP	OPERATE
RE	RESET

NOTES

LABELS

WHITE LABEL WITH BLACK LETTERING WILL BE PROVIDED FOR ALL MOUNTED APPARATUS EQUIPMENT IDENTIFICATION AND FUNCTION REFERENCE LABEL WILL BE PROVIDED FOR FRONT MOUNTED EQUIPMENTS OF THE PANEL AND EQUIPMENT IDENTIFICATION LABEL WILL BE PROVIDED FOR INTERNALLY MOUNTED EQUIPMENTS

WIRING

PVC INSULATED 600V GRADE
 2.5 SQ.mm. YELLOW COLOURED FOR CT CIRCUITS
 2.5 SQ.mm. RE COLOURED FOR VT CIRCUITS
 1.5 SQ.mm. GREY COLOURED FOR DC SUPPLY, SCADA AND CONTROL CIRCUITS
 2.5 SQ.mm. BLACK COLOURED FOR AVC AND AC CIRCUITS
 2.5 SQ.mm. YELLOW/GREEN COLOURED FOR EARTHING CONNECTIONS
 FOLLOWING MARKERS SHALL BE PROVIDED ON FOLLOWING WIRES:
 + SIGN FOR DC + WIRE
 - SIGN FOR DC - WIRE

LUGS

A. CT CIRCUITS- RING TYPE
 B. OTHER CIRCUITS - SPADE TYPE

FERULLING

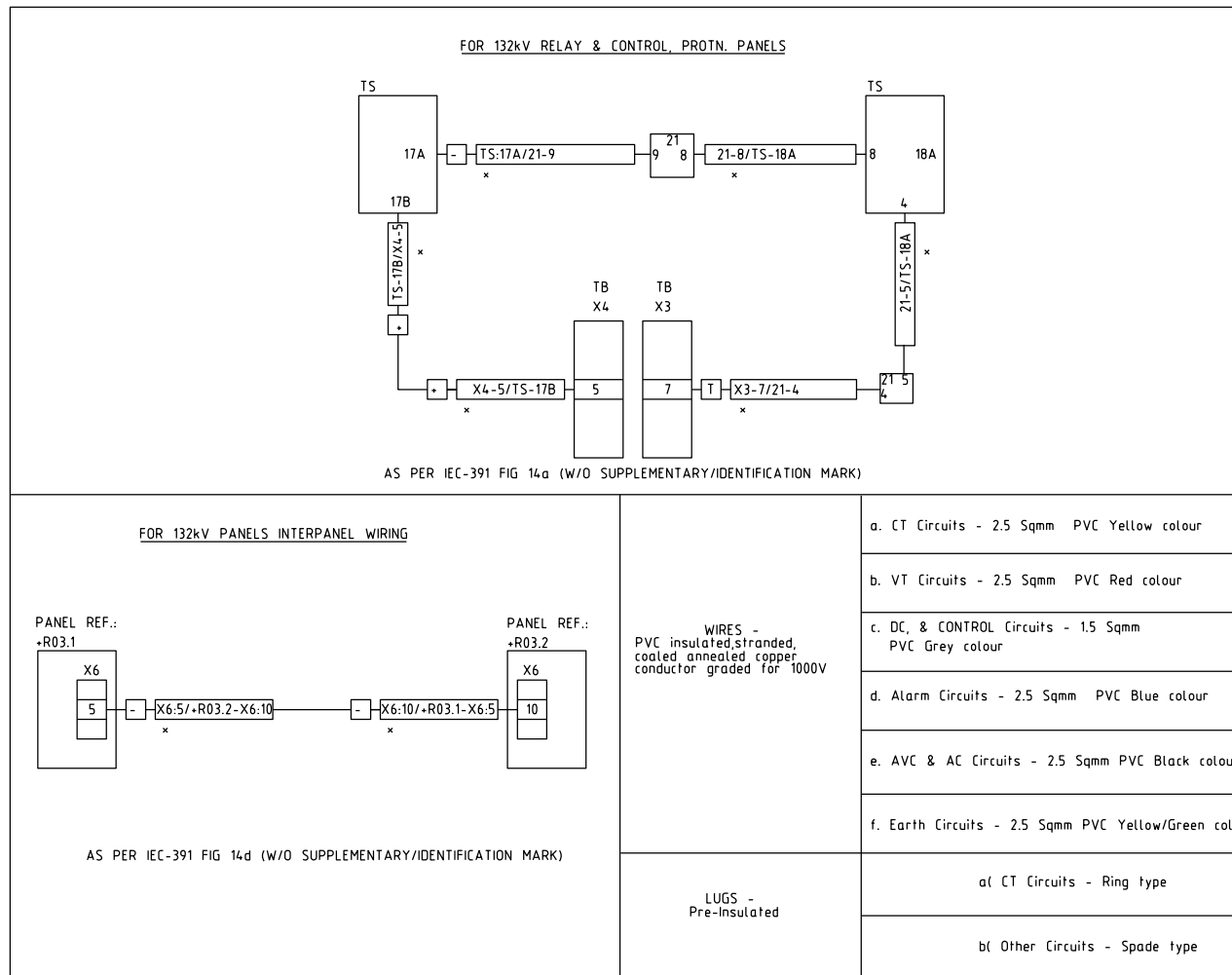
YELLOW TUBE 3.2 mm FOR 1.5SQ mm WIRES AND 4.2 FOR 2.5 SQ mm WIRES
 (AS PER 31 - TMSS-1, RE.0)

G

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COMMON LEGEND				الشركة الوطنية لنقل الكهرباء National Grid SA			
			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1/2							
00			13 04		FOR APPROVAL		S/S 8709-132/13.8KV IN AL-KHARJ CITY							
REV. NO.			DATE		DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC					

COMMON LEGEND			
132kV UGF-8710 RELAY PANEL-1/2			
S/S 8709-132/13.8KV IN AL-KHARJ CITY			
RIYADH SAUDI ARABIA			

INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
-		C421		CD-322919		013 014		00	



NOTE:1 ADDITIONAL MARKING AS APPLICABLE

NOTE:2 FERRULE NUMBERING WILL BE BLACK LETTERS ON YELLOW TUBE
3.2 mm for 1.5 sq mm wires and
4.2 mm for 2.5 sq mm wires
(As per 31-TMSS-1, REV 0)

NOTE:3 STARTING POINT OF THE FERRULE LEFT TO RIGHT

AS-BUILT BY _____ DATE _____

CONTRACT NO. 11131113/00

JOB ORDER NO. S-13656

00

REV. NO.

13 04

DATE

FOR APPROVAL

DESCRIPTION

DRAWN BY RIZ

CHECKED BY KVR

DATE STARTED 24.01.2013

DATE COMPLETED _____

OPRG. DEPT. CTPD

ENG. DEPT. AUT-PSAC

FERRULE AND WIRING DETAILS

132kV UGF-8710 RELAY PANEL-1/2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

INDEX

PLANT NO.

DRAWING NUMBER

SHEET NO.

CONT.

REV. NO.

-

C421


CD-322919

014

015

00

الشركة الوطنية لنقل الكهرباء



National Grid SA


نقل الكهرباء

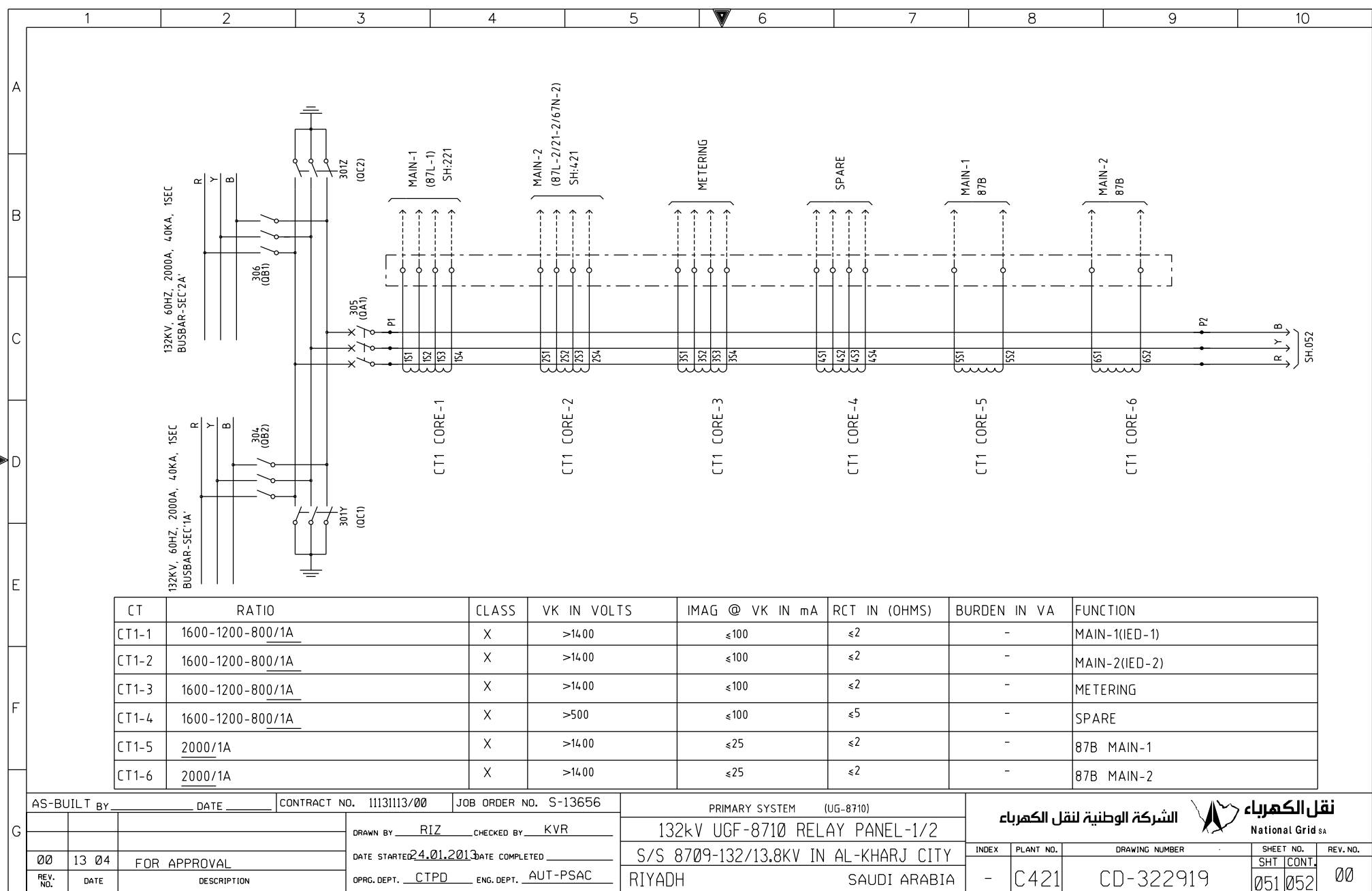
G

	1	2	3	4	5	6	7	8	9	10																																																																																																																						
A	<table><tr><td rowspan="20"><div>ABB</div><div>PROTECTION & SUBSTATION AUTOMATION</div></td><td>MANUFACTURER</td><td>SCHEMATICS DWG.NO</td><td>PANEL DESCRIPTION</td><td>PANEL REFERENCE</td></tr><tr><td></td><td></td><td>SS 8709 132kV RELAY PANELS</td><td></td></tr><tr><td rowspan="2">CD-322928</td><td></td><td>132/13.8kV GT-1 RELAY PANEL -1</td><td>+R05.1</td></tr><tr><td></td><td>132/13.8kV GT-1 RELAY PANEL -2</td><td>+R05.2</td></tr><tr><td rowspan="2">CD-322931</td><td></td><td>132/13.8kV GT-2 RELAY PANEL -1</td><td>+R03.1</td></tr><tr><td></td><td>132/13.8kV GT-2 RELAY PANEL -2</td><td>+R03.2</td></tr><tr><td rowspan="2">CD-322934</td><td></td><td>132/13.8kV GT-3 RELAY PANEL -1</td><td>+R04.1</td></tr><tr><td></td><td>132/13.8kV GT-3 RELAY PANEL -2</td><td>+R04.2</td></tr><tr><td>CD-322936</td><td></td><td>132/13.8kV TRANSFORMER-1,2& 3 AVC PANEL</td><td>+AVC</td></tr><tr><td rowspan="2">CD-322922</td><td></td><td>132KV SPARE-1 UGF RELAY PANEL -1</td><td>+R07.1</td></tr><tr><td></td><td>132KV SPARE-1 UGF RELAY PANEL -2</td><td>+R07.2</td></tr><tr><td rowspan="2">CD-322916</td><td></td><td>132KV 8020 UGF RELAY PANEL -1</td><td>+R02.1</td></tr><tr><td></td><td>132KV 8020 UGF RELAY PANEL -2</td><td>+R02.2</td></tr><tr><td rowspan="2">CD-322919</td><td></td><td>132KV 8710 UGF RELAY PANEL -1</td><td>+R03.1</td></tr><tr><td></td><td>132KV 8710 UGF RELAY PANEL -2</td><td>+R03.2</td></tr><tr><td rowspan="2">CD-322925</td><td></td><td>132KV SPARE-2 UGF RELAY PANEL -1</td><td>+R06.1</td></tr><tr><td></td><td>132KV SPARE-2 UGF RELAY PANEL -2</td><td>+R06.2</td></tr><tr><td>CD-323012</td><td></td><td>132KV FOIP PANEL</td><td>+FOIP</td></tr><tr><td>CD-322946</td><td></td><td>132kV BUS COUPLER-A</td><td>+R130</td></tr><tr><td>CD-322948</td><td></td><td>132kV BUS COUPLER-B</td><td>+R230</td></tr><tr><td>CD-322950</td><td></td><td>132kV BUS SECTION</td><td>+R120</td></tr><tr><td>CD-322991</td><td></td><td>132kV BUSBAR PROTECTION MAIN-1 CENTRAL UNIT PANEL</td><td>+BB1-1</td></tr><tr><td>CD-322993</td><td></td><td>132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL</td><td>+BB1-2</td></tr><tr><td>CD-322995</td><td></td><td>132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL</td><td>+BB1-3</td></tr><tr><td>CD-322997</td><td></td><td>132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL</td><td>+BB1-4</td></tr><tr><td>CD-322999</td><td></td><td>132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL</td><td>+BB1-5</td></tr><tr><td>CD-323001</td><td></td><td>132kV BUSBAR PROTECTION MAIN-2 CENTRAL UNIT PANEL</td><td>+BB2-1</td></tr><tr><td>CD-323003</td><td></td><td>132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL</td><td>+BB2-2</td></tr><tr><td>CD-323005</td><td></td><td>132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL</td><td>+BB2-3</td></tr><tr><td>CD-323007</td><td></td><td>132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL</td><td>+BB2-4</td></tr><tr><td>CD-323009</td><td></td><td>132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL</td><td>+BB2-5</td></tr></table>										<div>ABB</div> <div>PROTECTION & SUBSTATION AUTOMATION</div>	MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE			SS 8709 132kV RELAY PANELS		CD-322928		132/13.8kV GT-1 RELAY PANEL -1	+R05.1		132/13.8kV GT-1 RELAY PANEL -2	+R05.2	CD-322931		132/13.8kV GT-2 RELAY PANEL -1	+R03.1		132/13.8kV GT-2 RELAY PANEL -2	+R03.2	CD-322934		132/13.8kV GT-3 RELAY PANEL -1	+R04.1		132/13.8kV GT-3 RELAY PANEL -2	+R04.2	CD-322936		132/13.8kV TRANSFORMER-1,2& 3 AVC PANEL	+AVC	CD-322922		132KV SPARE-1 UGF RELAY PANEL -1	+R07.1		132KV SPARE-1 UGF RELAY PANEL -2	+R07.2	CD-322916		132KV 8020 UGF RELAY PANEL -1	+R02.1		132KV 8020 UGF RELAY PANEL -2	+R02.2	CD-322919		132KV 8710 UGF RELAY PANEL -1	+R03.1		132KV 8710 UGF RELAY PANEL -2	+R03.2	CD-322925		132KV SPARE-2 UGF RELAY PANEL -1	+R06.1		132KV SPARE-2 UGF RELAY PANEL -2	+R06.2	CD-323012		132KV FOIP PANEL	+FOIP	CD-322946		132kV BUS COUPLER-A	+R130	CD-322948		132kV BUS COUPLER-B	+R230	CD-322950		132kV BUS SECTION	+R120	CD-322991		132kV BUSBAR PROTECTION MAIN-1 CENTRAL UNIT PANEL	+BB1-1	CD-322993		132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-2	CD-322995		132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-3	CD-322997		132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-4	CD-322999		132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-5	CD-323001		132kV BUSBAR PROTECTION MAIN-2 CENTRAL UNIT PANEL	+BB2-1	CD-323003		132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-2	CD-323005		132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-3	CD-323007		132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-4	CD-323009		132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-5
<div>ABB</div> <div>PROTECTION & SUBSTATION AUTOMATION</div>												MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE																																																																																																																	
														SS 8709 132kV RELAY PANELS																																																																																																																		
												CD-322928		132/13.8kV GT-1 RELAY PANEL -1	+R05.1																																																																																																																	
														132/13.8kV GT-1 RELAY PANEL -2	+R05.2																																																																																																																	
												CD-322931		132/13.8kV GT-2 RELAY PANEL -1	+R03.1																																																																																																																	
														132/13.8kV GT-2 RELAY PANEL -2	+R03.2																																																																																																																	
												CD-322934		132/13.8kV GT-3 RELAY PANEL -1	+R04.1																																																																																																																	
														132/13.8kV GT-3 RELAY PANEL -2	+R04.2																																																																																																																	
												CD-322936		132/13.8kV TRANSFORMER-1,2& 3 AVC PANEL	+AVC																																																																																																																	
												CD-322922		132KV SPARE-1 UGF RELAY PANEL -1	+R07.1																																																																																																																	
														132KV SPARE-1 UGF RELAY PANEL -2	+R07.2																																																																																																																	
												CD-322916		132KV 8020 UGF RELAY PANEL -1	+R02.1																																																																																																																	
														132KV 8020 UGF RELAY PANEL -2	+R02.2																																																																																																																	
												CD-322919		132KV 8710 UGF RELAY PANEL -1	+R03.1																																																																																																																	
														132KV 8710 UGF RELAY PANEL -2	+R03.2																																																																																																																	
												CD-322925		132KV SPARE-2 UGF RELAY PANEL -1	+R06.1																																																																																																																	
														132KV SPARE-2 UGF RELAY PANEL -2	+R06.2																																																																																																																	
												CD-323012		132KV FOIP PANEL	+FOIP																																																																																																																	
												CD-322946		132kV BUS COUPLER-A	+R130																																																																																																																	
	CD-322948		132kV BUS COUPLER-B	+R230																																																																																																																												
CD-322950		132kV BUS SECTION	+R120																																																																																																																													
CD-322991		132kV BUSBAR PROTECTION MAIN-1 CENTRAL UNIT PANEL	+BB1-1																																																																																																																													
CD-322993		132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-2																																																																																																																													
CD-322995		132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-3																																																																																																																													
CD-322997		132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-4																																																																																																																													
CD-322999		132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-5																																																																																																																													
CD-323001		132kV BUSBAR PROTECTION MAIN-2 CENTRAL UNIT PANEL	+BB2-1																																																																																																																													
CD-323003		132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-2																																																																																																																													
CD-323005		132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-3																																																																																																																													
CD-323007		132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-4																																																																																																																													
CD-323009		132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-5																																																																																																																													
B																																																																																																																																
C																																																																																																																																
D																																																																																																																																
E																																																																																																																																
F																																																																																																																																
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	DRAWING REFERENCES		الشركة الوطنية لنقل الكهرباء National Grid SA																																																																																																																									
			DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-8710 RELAY PANEL-1/2																																																																																																																											
			DATE STARTED 24.01.2013	DATE COMPLETED _____	S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.																																																																																																																					
	00	13 04	FOR APPROVAL		RIYADH SAUDI ARABIA		-	C421	CD-322919	SHT 1CONT.	00																																																																																																																					
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC																																																																																																																										

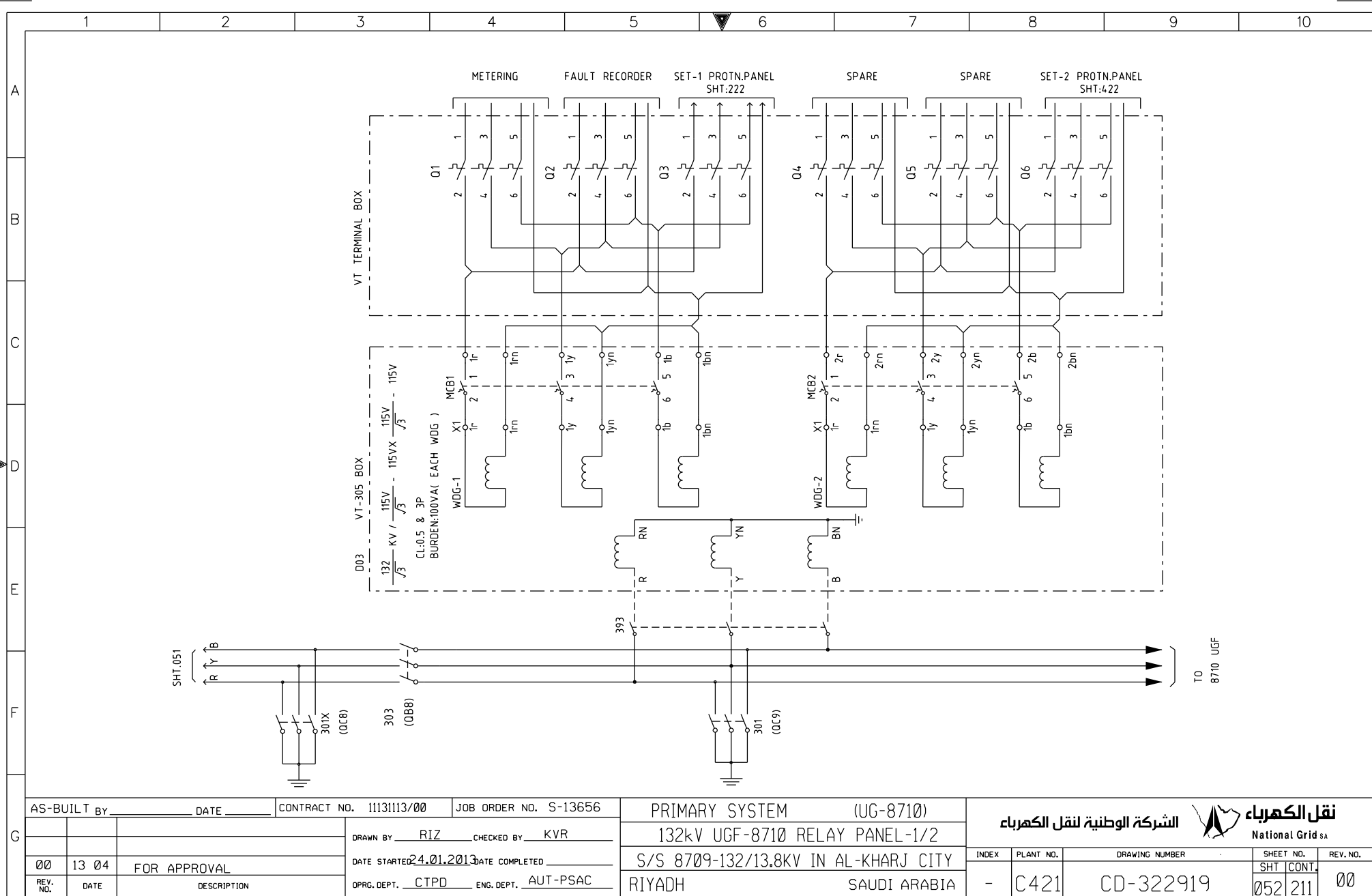
NG/D2-D (2012/01)
DMS VECTOR NGD200

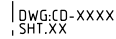
	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	DRAWING REFERENCES		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء</div> <div>National Grid SA</div>				
			DRAWN BY RIZ CHECKED BY KVR	132kV UGF-8710 RELAY PANEL-1/2		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
			DATE STARTED 24.01.2013 DATE COMPLETED _____	S/S 8709-132/13.8KV IN AL-KHARJ CITY					SHT CONT.	
00	13 04	FOR APPROVAL	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA		-	C421	CD-322919	016 051	00
REV. NO.	DATE	DESCRIPTION								

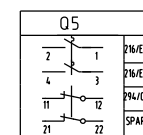
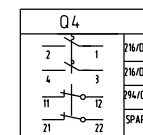
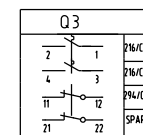
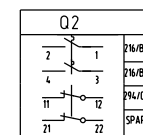
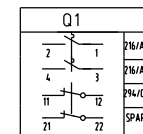
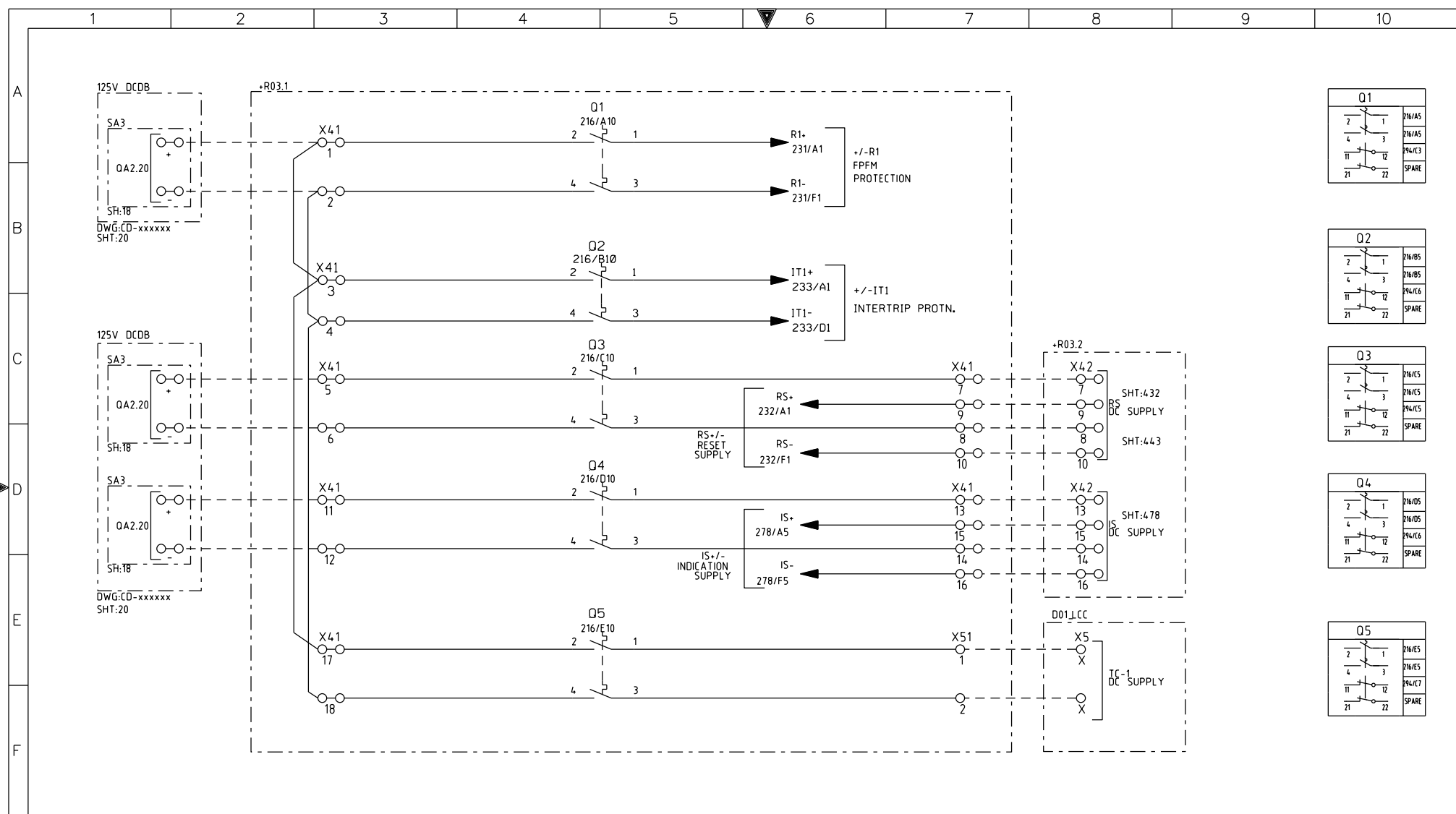


THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



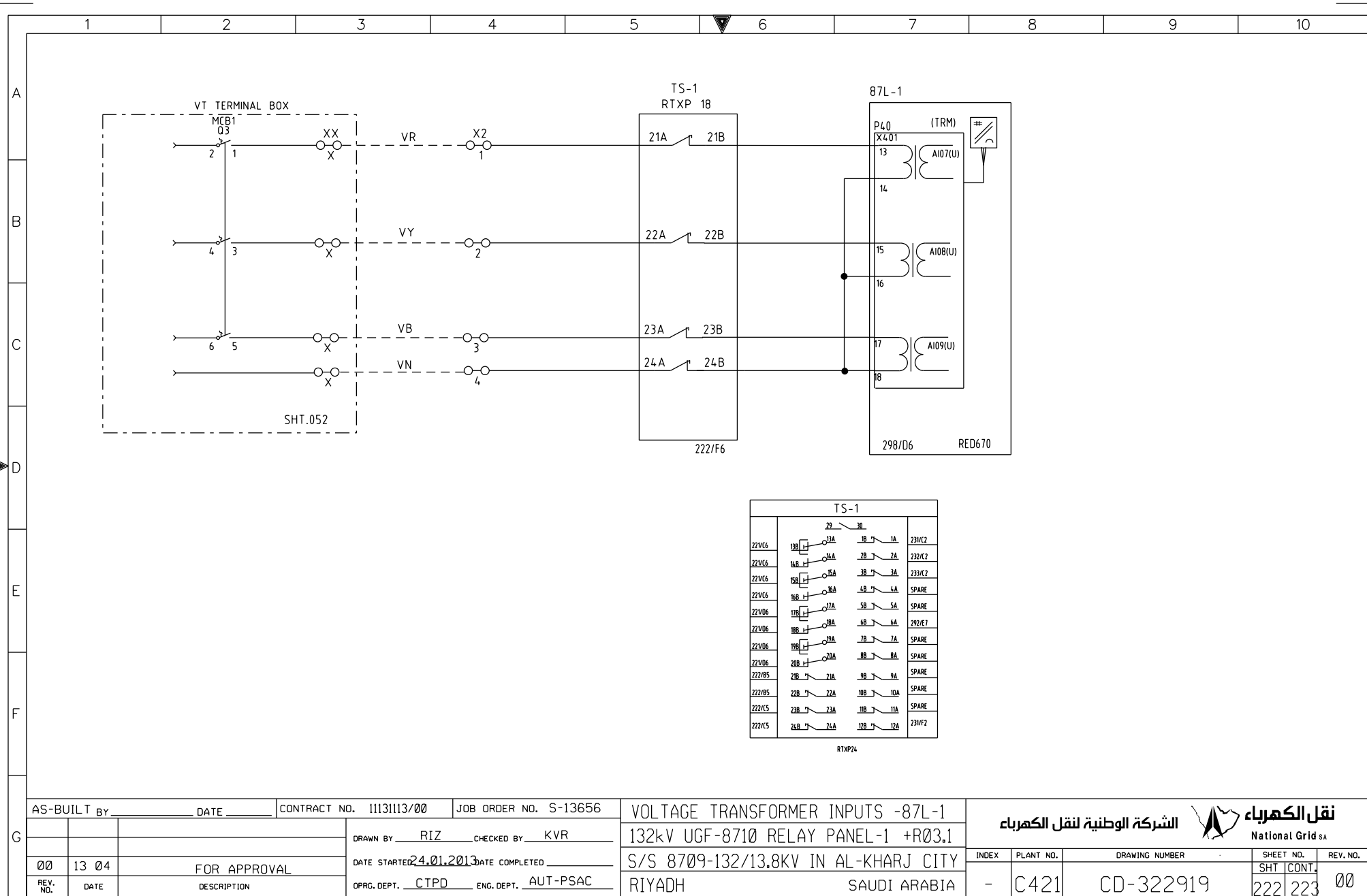


DMS	VECTOR	NGD200
-----	--------	--------

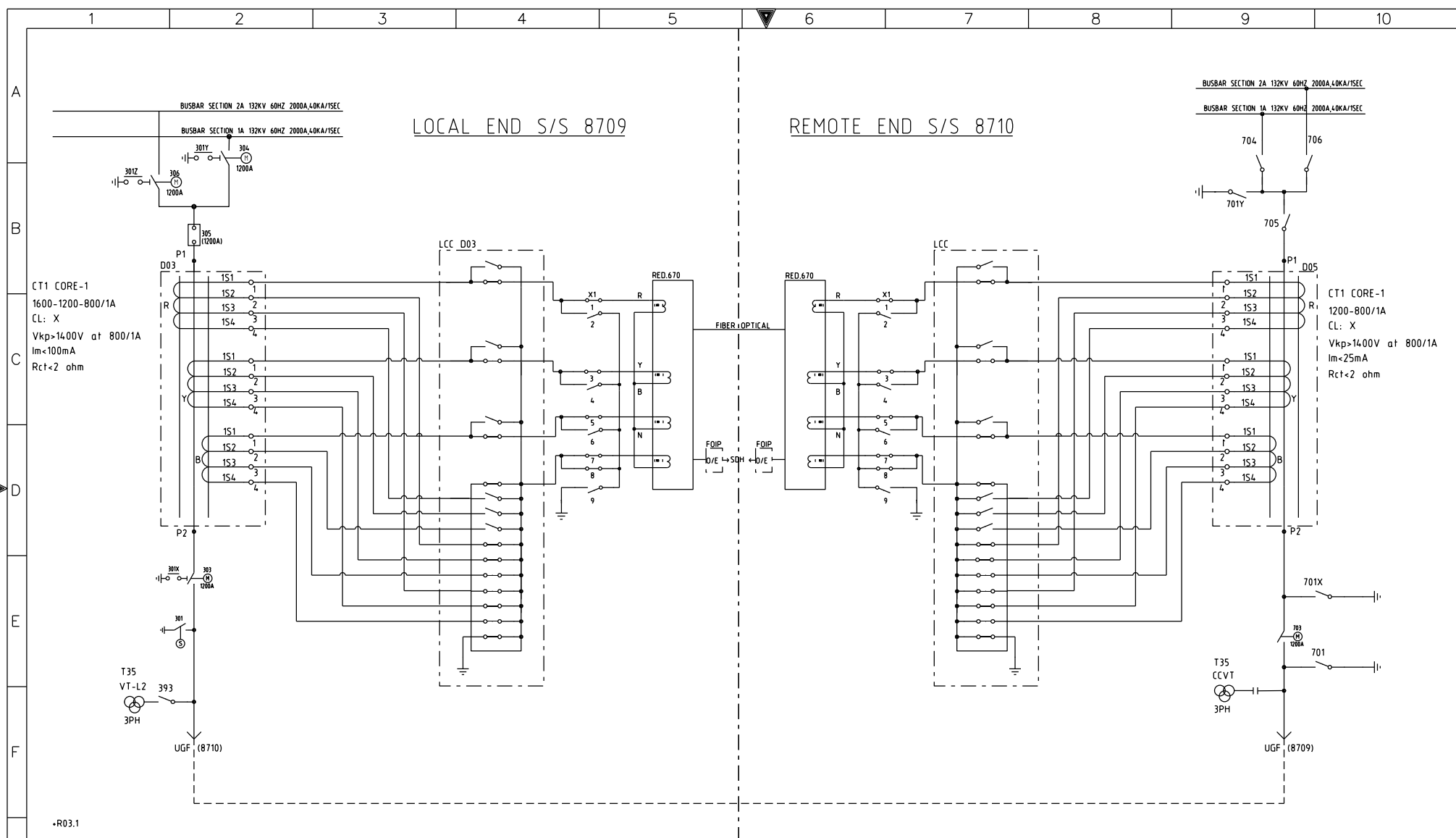


AS-BUILT BY _____ DATE _____			CONTRACT NO. 1113113/00		JOB ORDER NO. S-13656		DC SUPPLY DISTRIBUTION		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1/2		National Grid SA			
			DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.	
00			13 04		FOR APPROVAL		RIYADH		-		C421	
REV. NO.			DATE		DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		DRAWING NUMBER	
											CD-322919	
											SHEET NO.	
											SHT (CONT.)	
											216/221	
											REV. NO.	
											00	

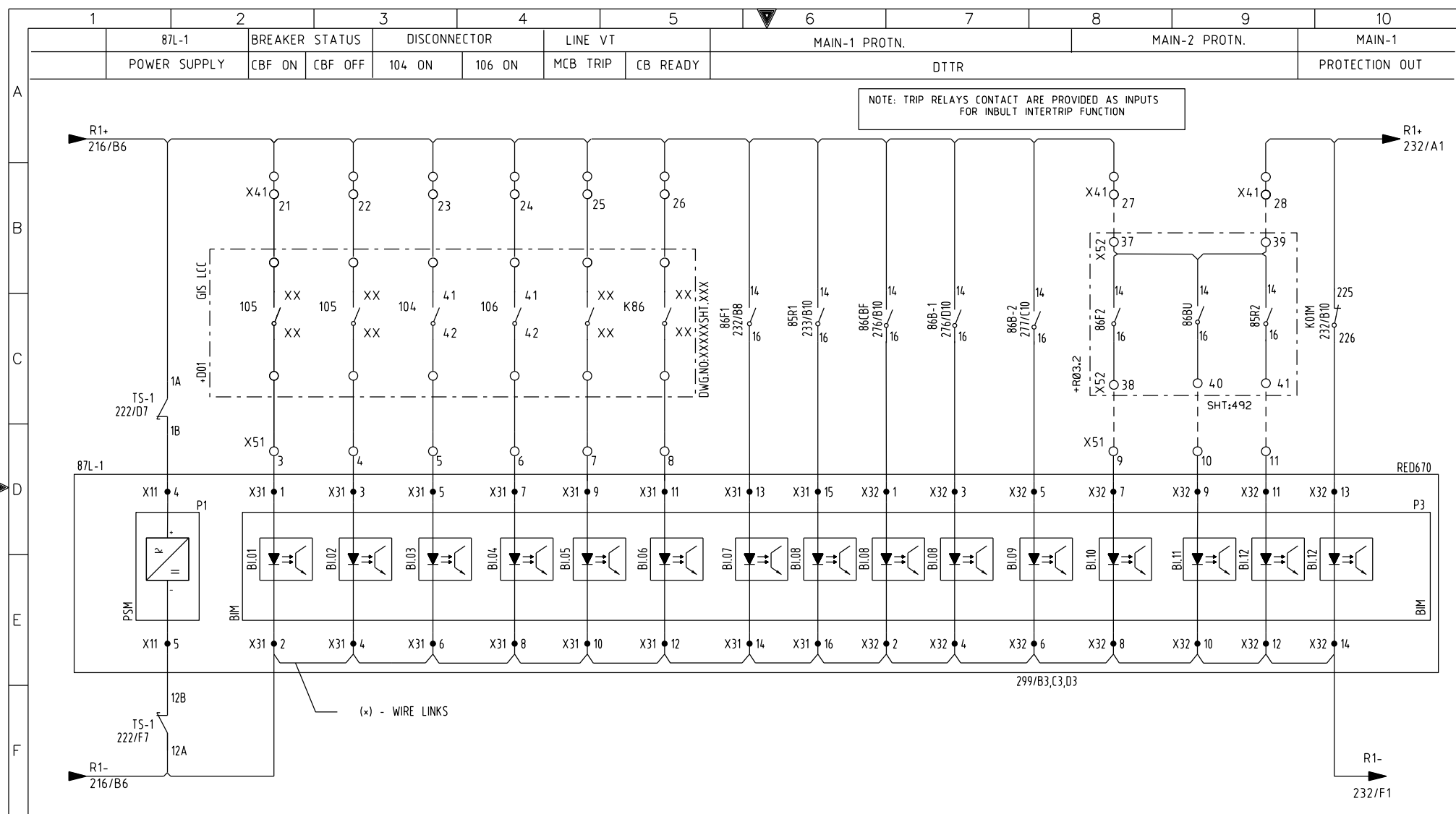
THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



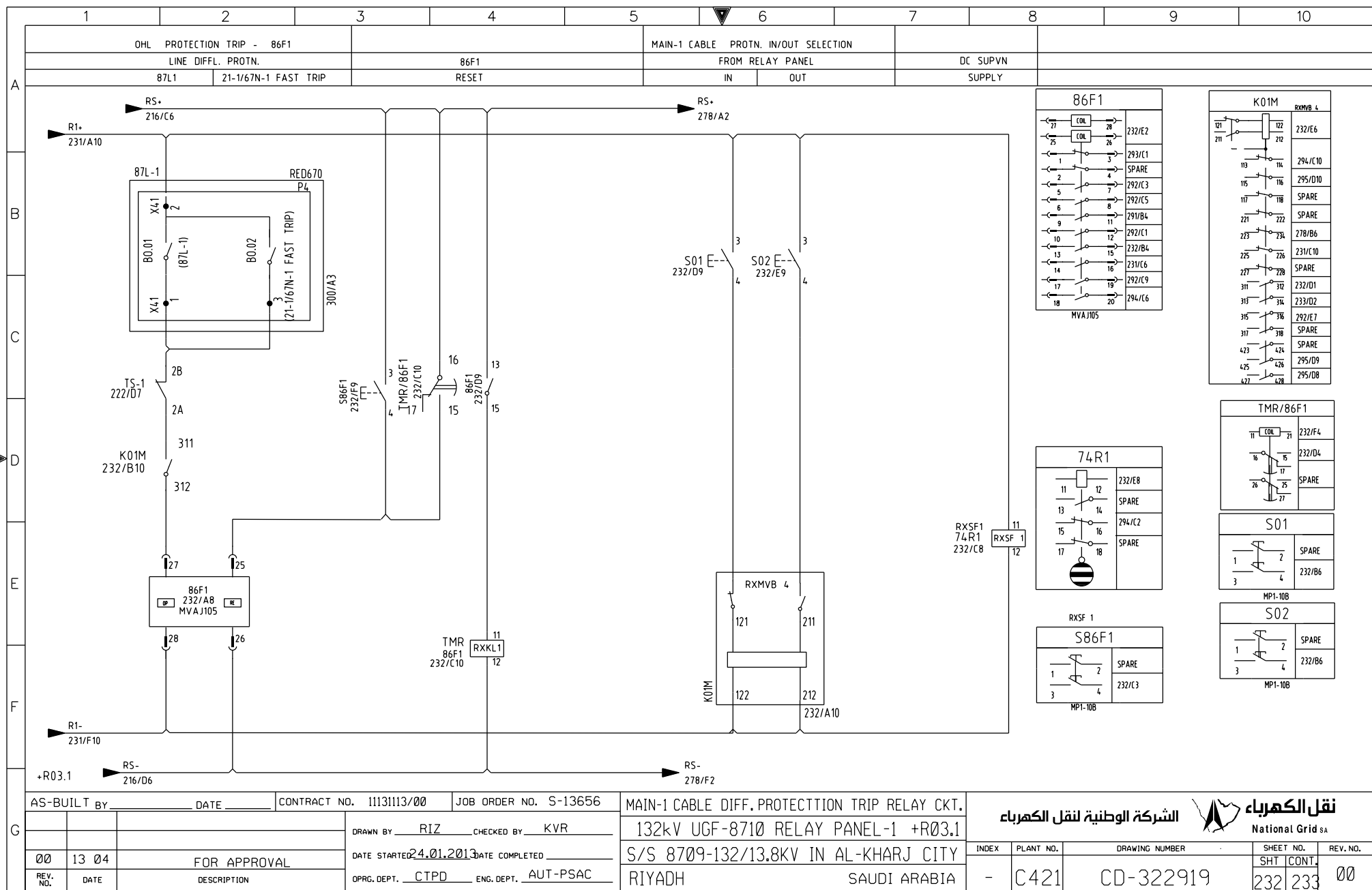
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	COMMUNICATION CIRCUITS		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
		DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-8710 RELAY PANEL-1 +R03.1		National Grid SA			
		DATE STARTED 24.01.2013	DATE COMPLETED _____	S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	SHEET NO.	REV. NO.
		OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA		-	C421	CD-322919	223/231
REV. NO.	DATE	DESCRIPTION							
00	13 04	FOR APPROVAL							



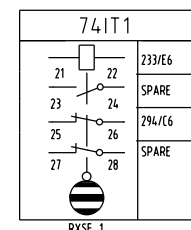
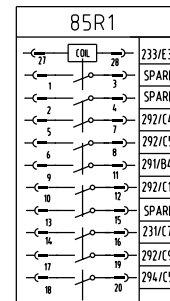
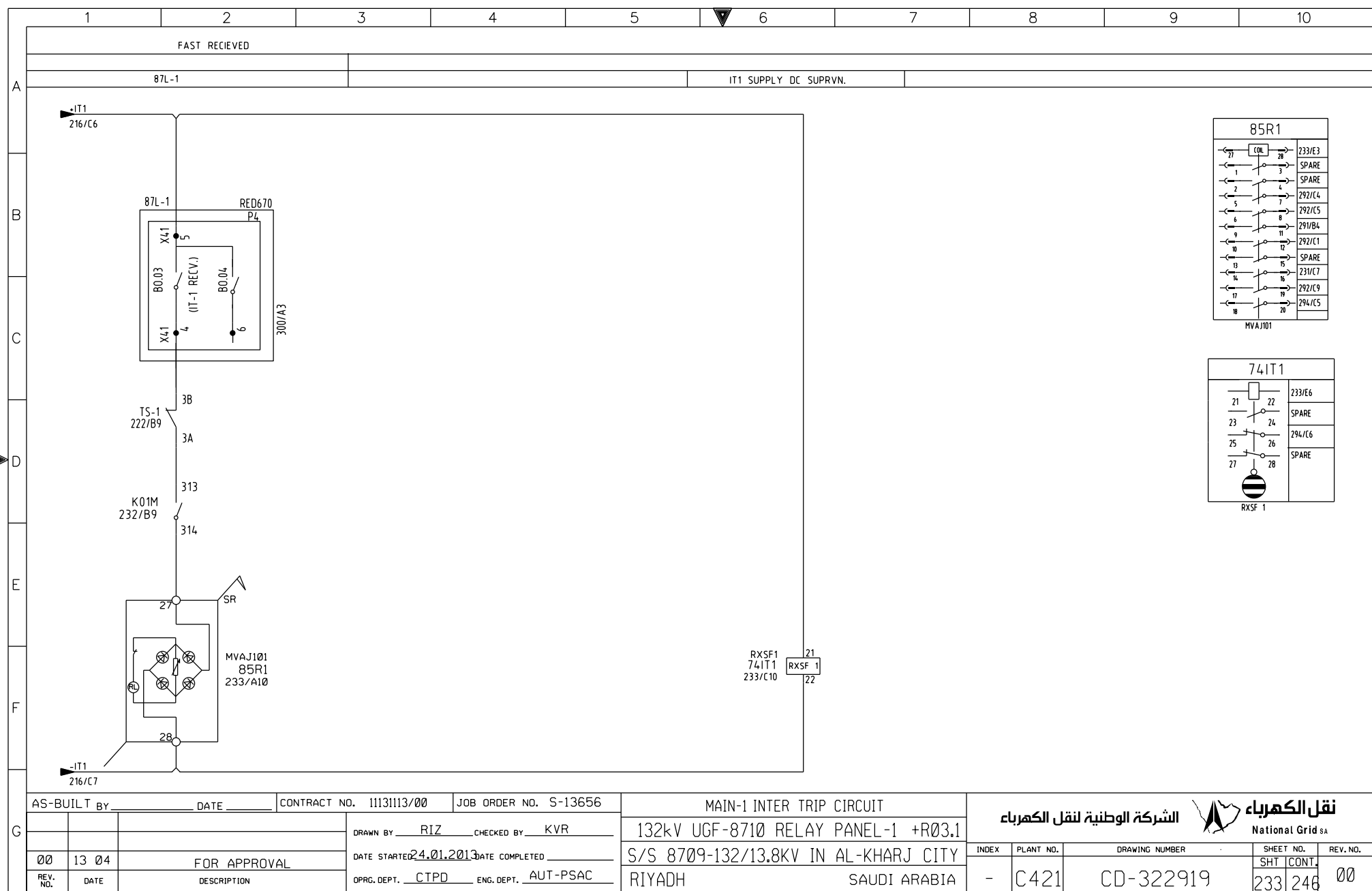
G

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> MAIN-1 PROTN. 87L-1 RELAY-BINARY INPUTS 132kV UGF-8710 RELAY PANEL-1 +R03.1 S/S 8709-132/13.8KV IN AL-KHARJ CITY RIYADH SAUDI ARABIA </div> <div style="width: 35%; text-align: right;"> <div style="display: flex; align-items: center; justify-content: space-between;"> <div style="text-align: center;"> </div> <div> نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid SA </div> </div> </div> </div>													
		DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 24.01.2013 DATE COMPLETED _____								INDEX PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
00 13 04		FOR APPROVAL		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC								-		C421		CD-322919		<div style="display: flex;"> <div style="border: 1px solid black; padding: 2px;">SHT</div> <div style="border: 1px solid black; padding: 2px;">CONT.</div> </div> <div style="display: flex;"> <div style="border: 1px solid black; padding: 2px;">231</div> <div style="border: 1px solid black; padding: 2px;">232</div> </div>	
REV. NO.		DATE		DESCRIPTION															

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



AS-BUILT BY

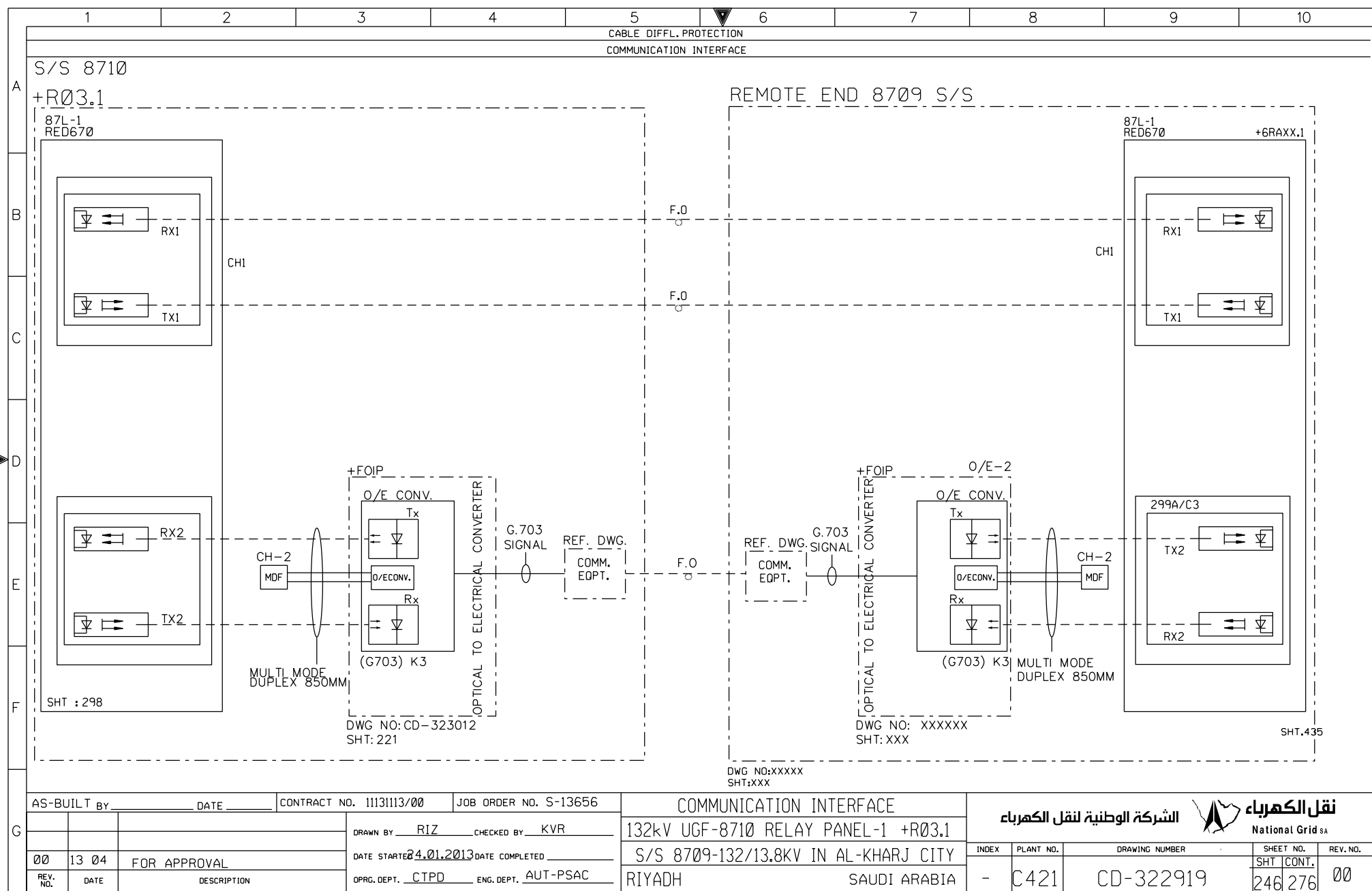
DATE

CONTRACT NO. 11131113/00

JOB ORDER NO. S-13656

</

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



AS-BUILT BY _____ DATE _____

CONTRACT NO. 11131113/00

JOB ORDER NO. S-13656

COMMUNICATION INTERFACE

132kV UGF-8710 RELAY PANEL-1 +R03.1

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid SA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	246/276	00

DRAWN BY RIZ CHECKED BY KVR

DATE STARTED 24.01.2013 DATE COMPLETED _____

OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

132kV UGF-8710 RELAY PANEL-1 +R03.1

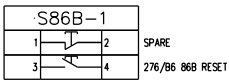
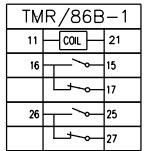
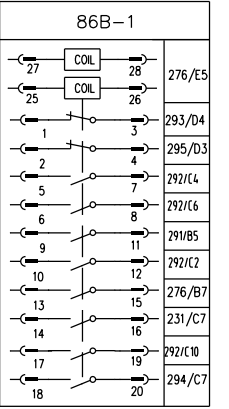
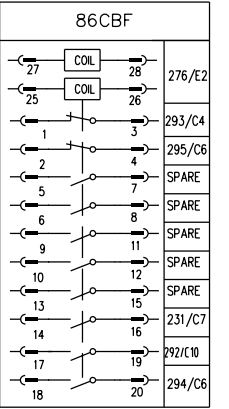
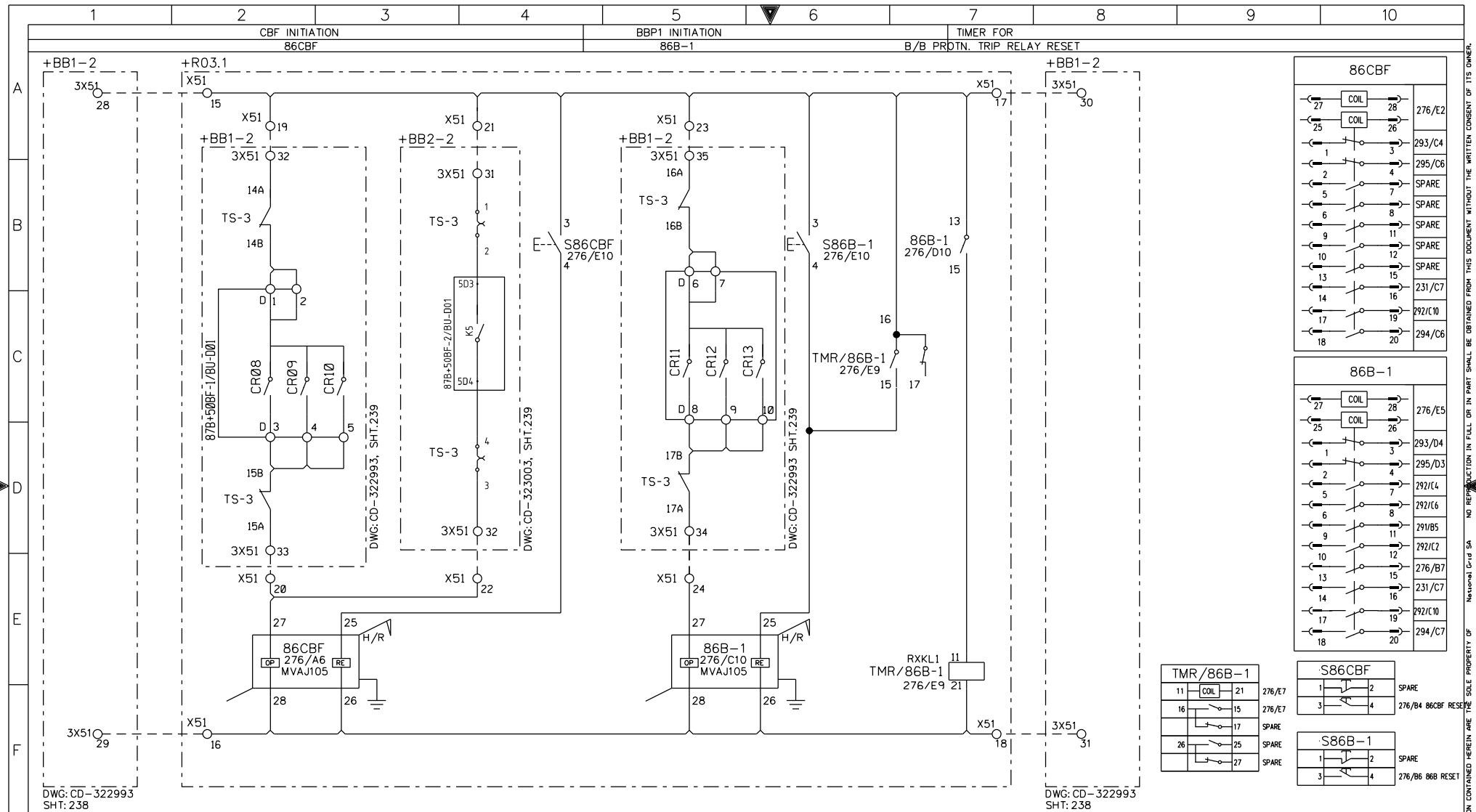
S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

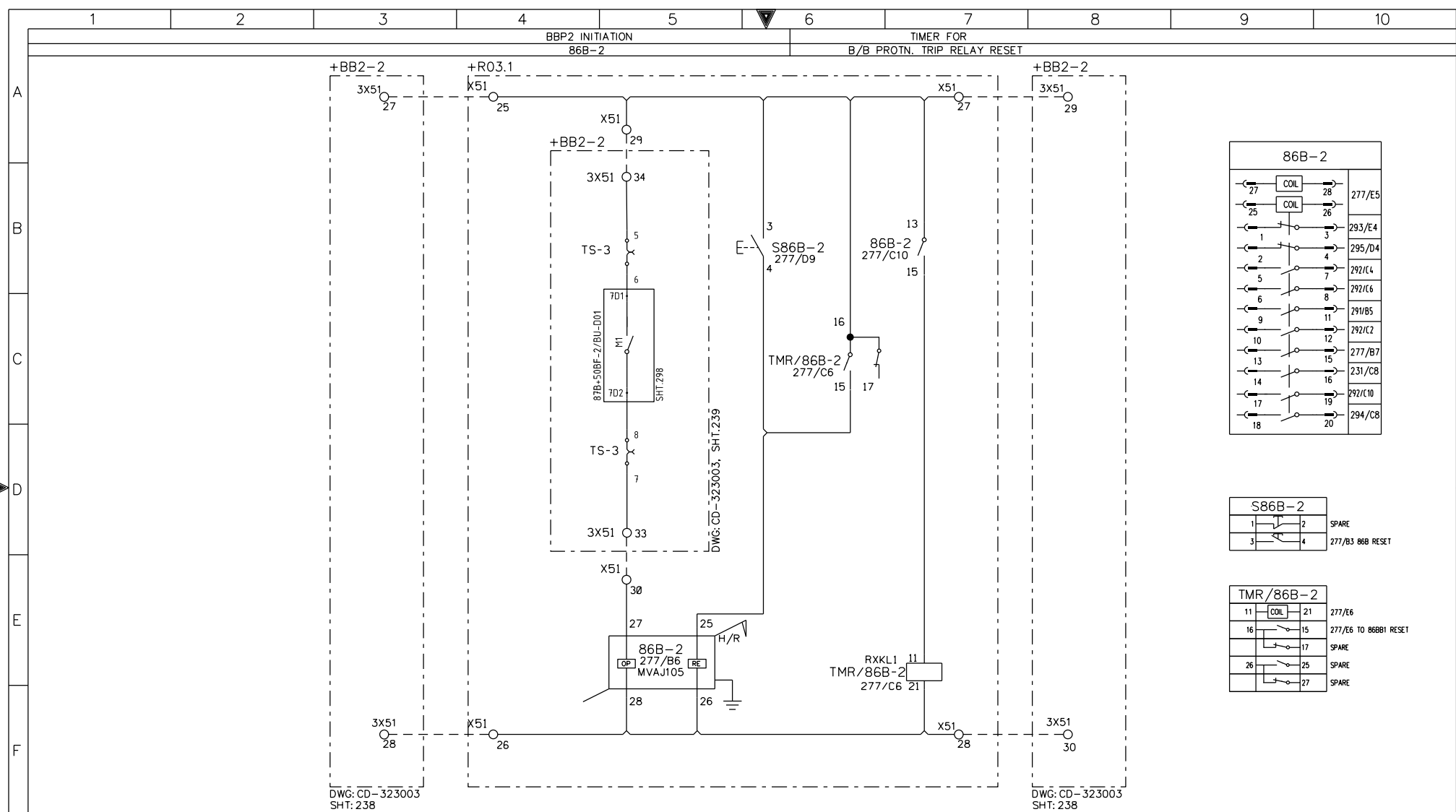
الشركة الوطنية لنقل الكهرباء
National Grid SA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	246/276	00

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CBF-1/2 & BUSBAR PROTN-1 TRIP RELAY CIRCUIT			الشركة الوطنية لنقل الكهرباء			
			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1			نقل الكهرباء			
			DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY			National Grid SA			
00			13 04		FOR APPROVAL		RIYADH			INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
REV. NO.			DATE		DESCRIPTION		SAUDI ARABIA			-	C421	CD-322919	276/277
					OPRG. DEPT. CTPD					REV. NO. 00			
					ENG. DEPT. AUT-PSAC								



86B-2			
27	COIL	28	277/E5
25	COIL	26	293/E4
1		3	295/D4
2		4	292/L4
5		7	292/L6
6		8	291/B5
9		11	292/C2
10		12	277/B7
13		15	231/C8
14		16	292/L10
17		19	294/C8
18		20	

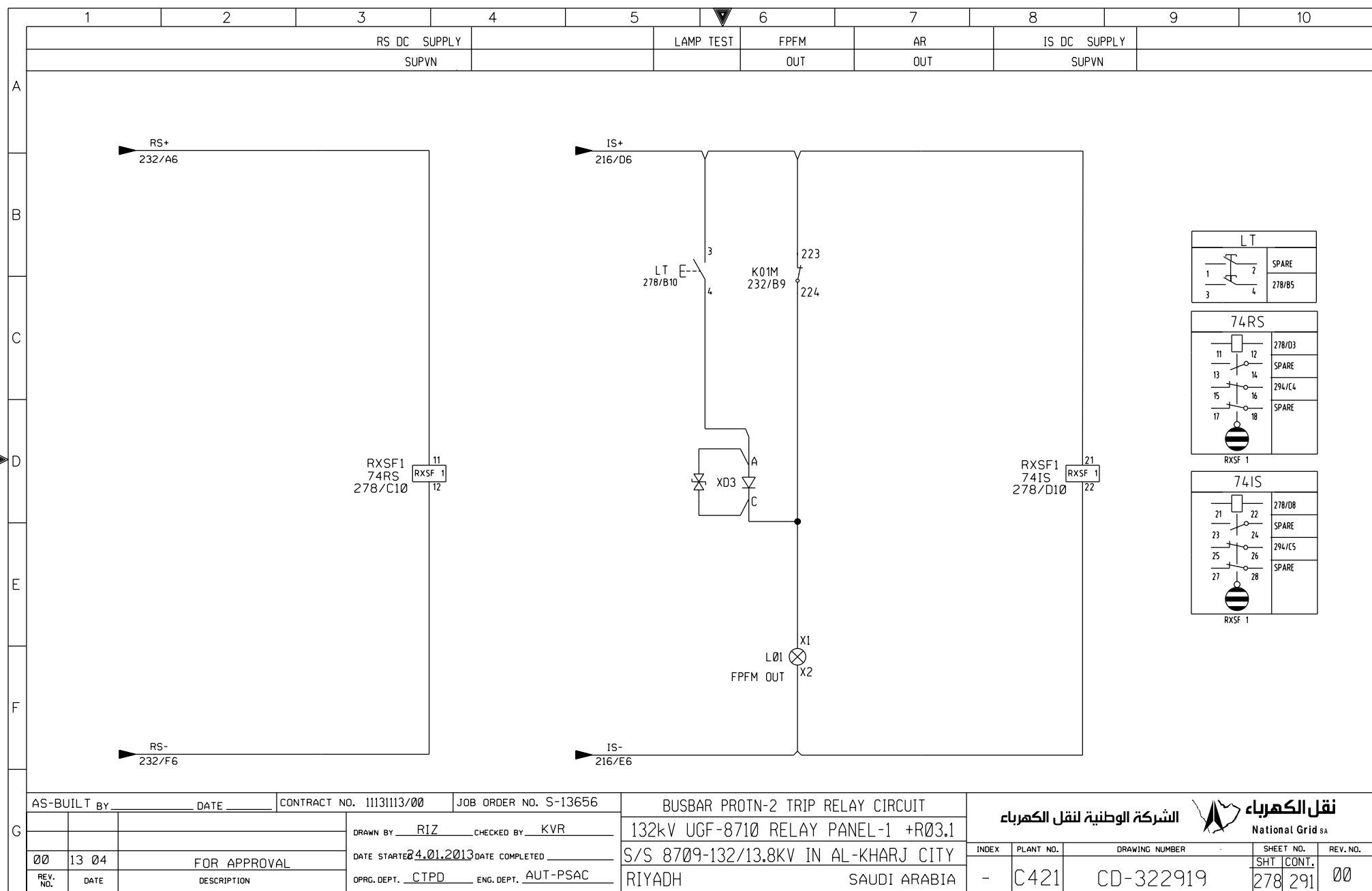
S86B-2			
1		2	SPARE
3		4	277/B3 86B RESET

TMR/86B-2			
11	COIL	21	277/E6
16		15	277/E6 TO 86B1 RESET
		17	SPARE
26		25	SPARE
		27	SPARE

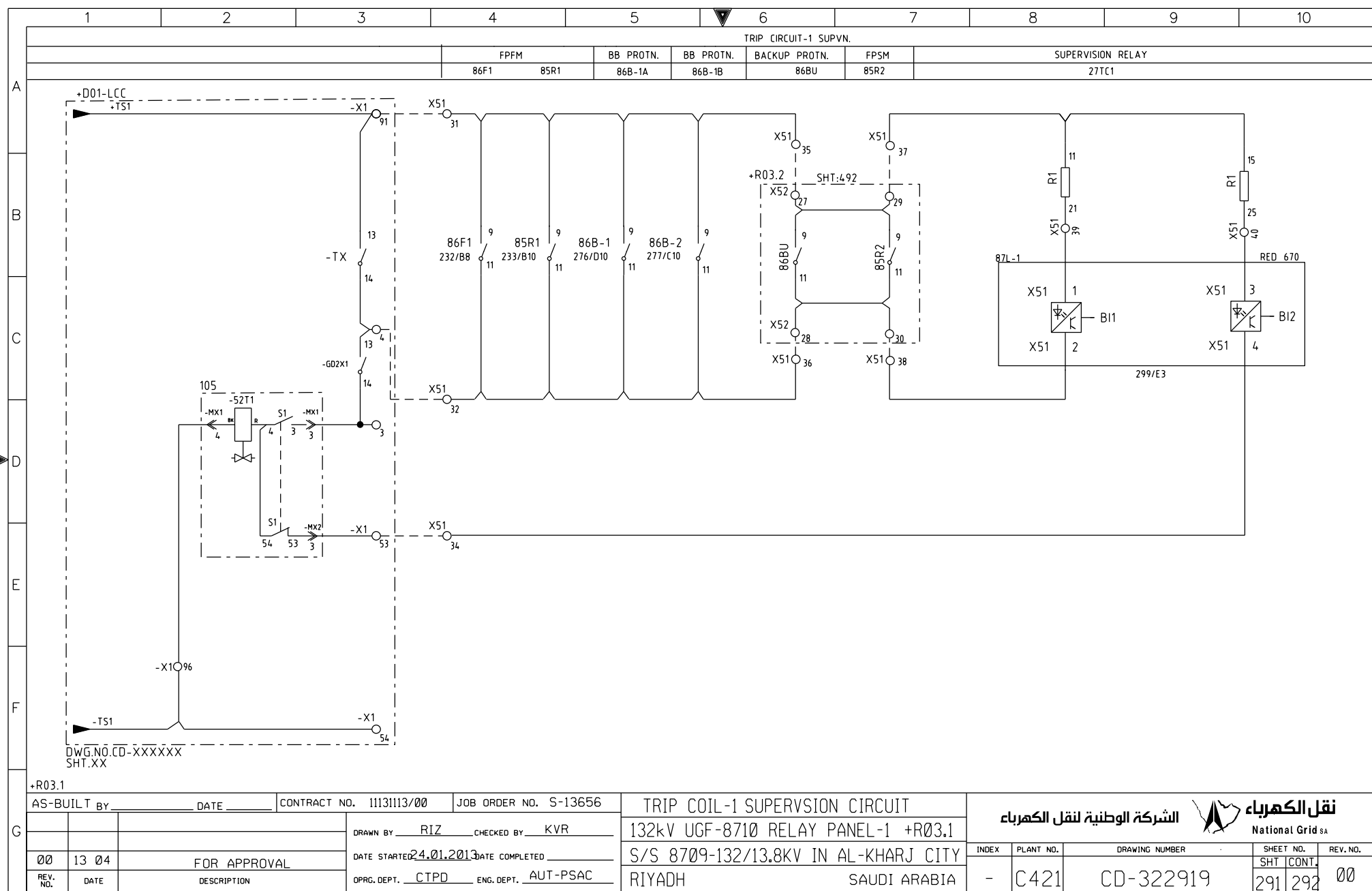
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	BUSBAR PROTN-2 TRIP RELAY CIRCUIT		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1				National Grid SA	
		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
00		FOR APPROVAL		RIYADH SAUDI ARABIA		-	C421	CD-322919	277/278
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC				

NG/D2-Q (2012/01)
DMS VECTOR NGD200

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

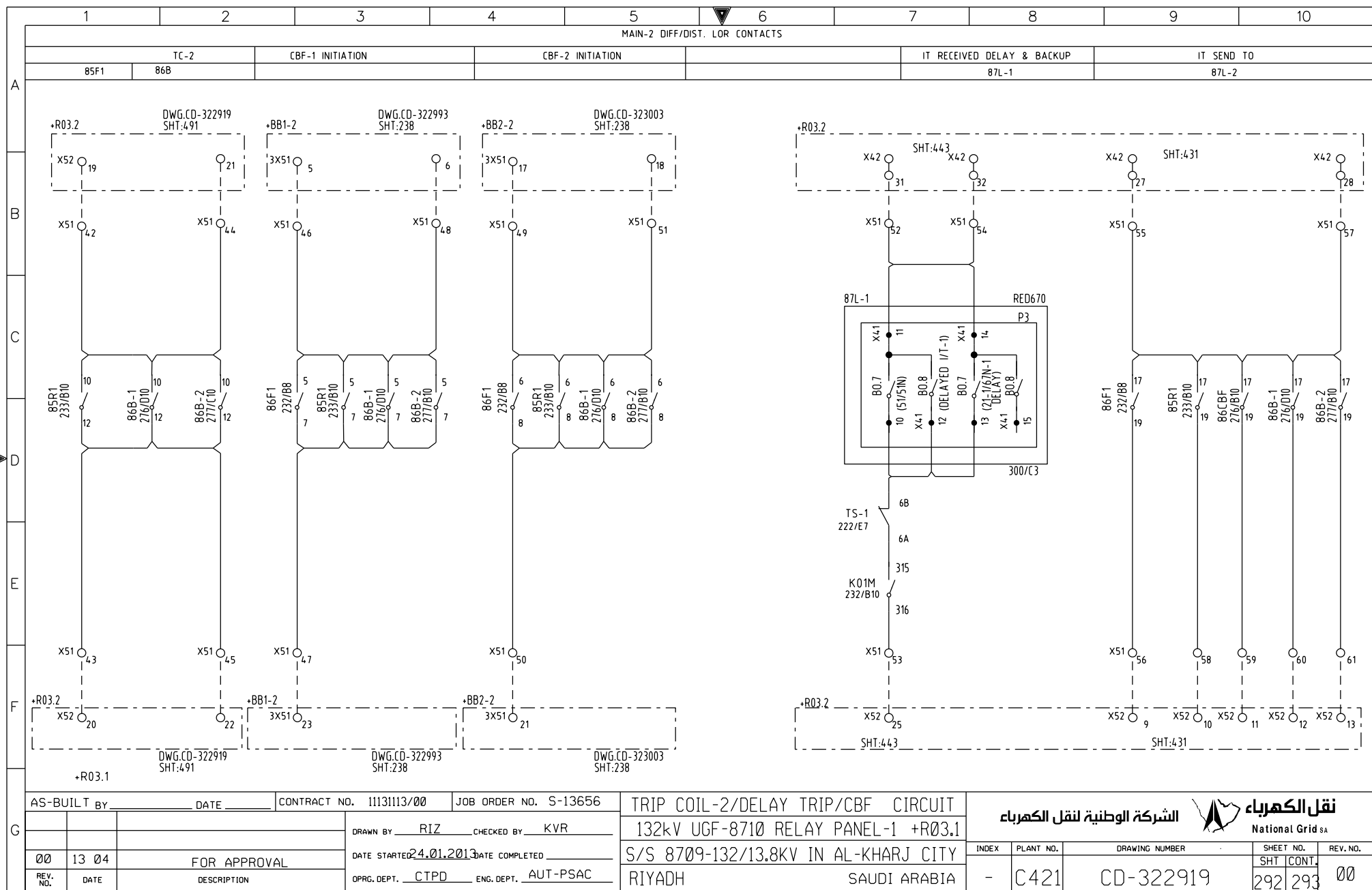


الشركة الوطنية لنقل الكهرباء

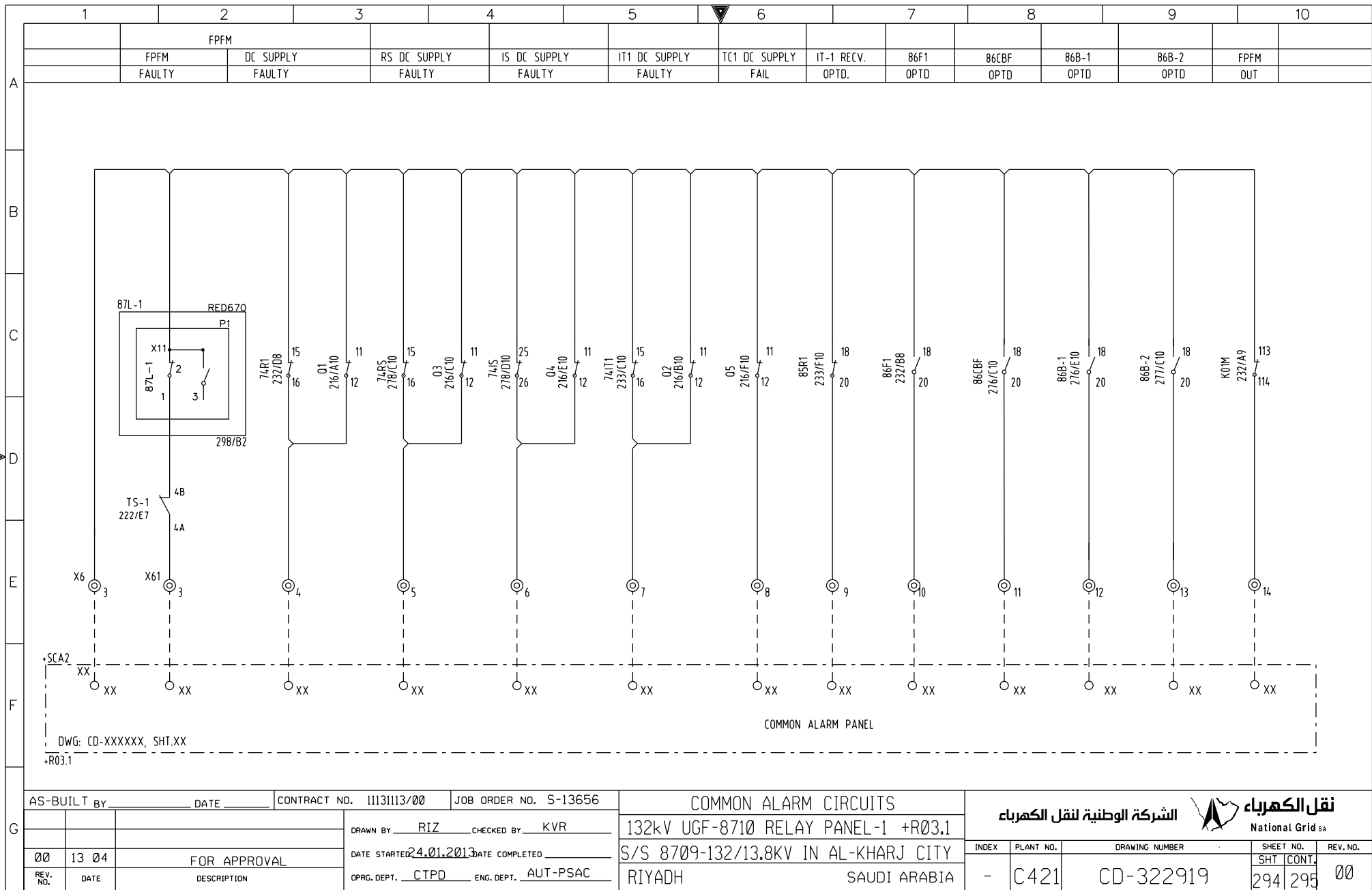
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
DRAWN BY RIZ		CHECKED BY KVR	
DATE STARTED 24.01.2013		DATE COMPLETED _____	
OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

TRIP COIL-1 SUPERVISION CIRCUIT	
132kV UGF-8710 RELAY PANEL-1 +R03.1	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

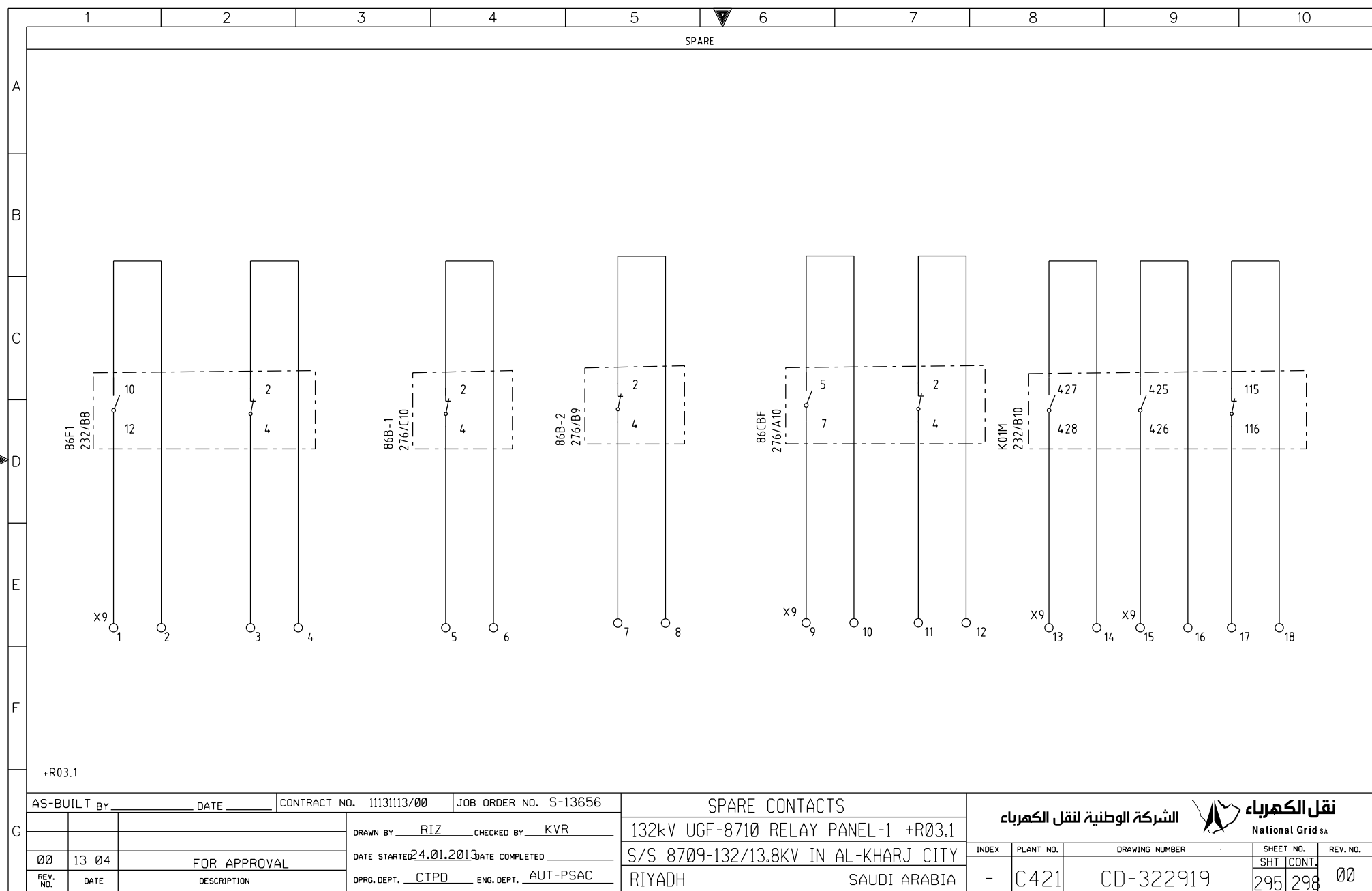
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	291	292



THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

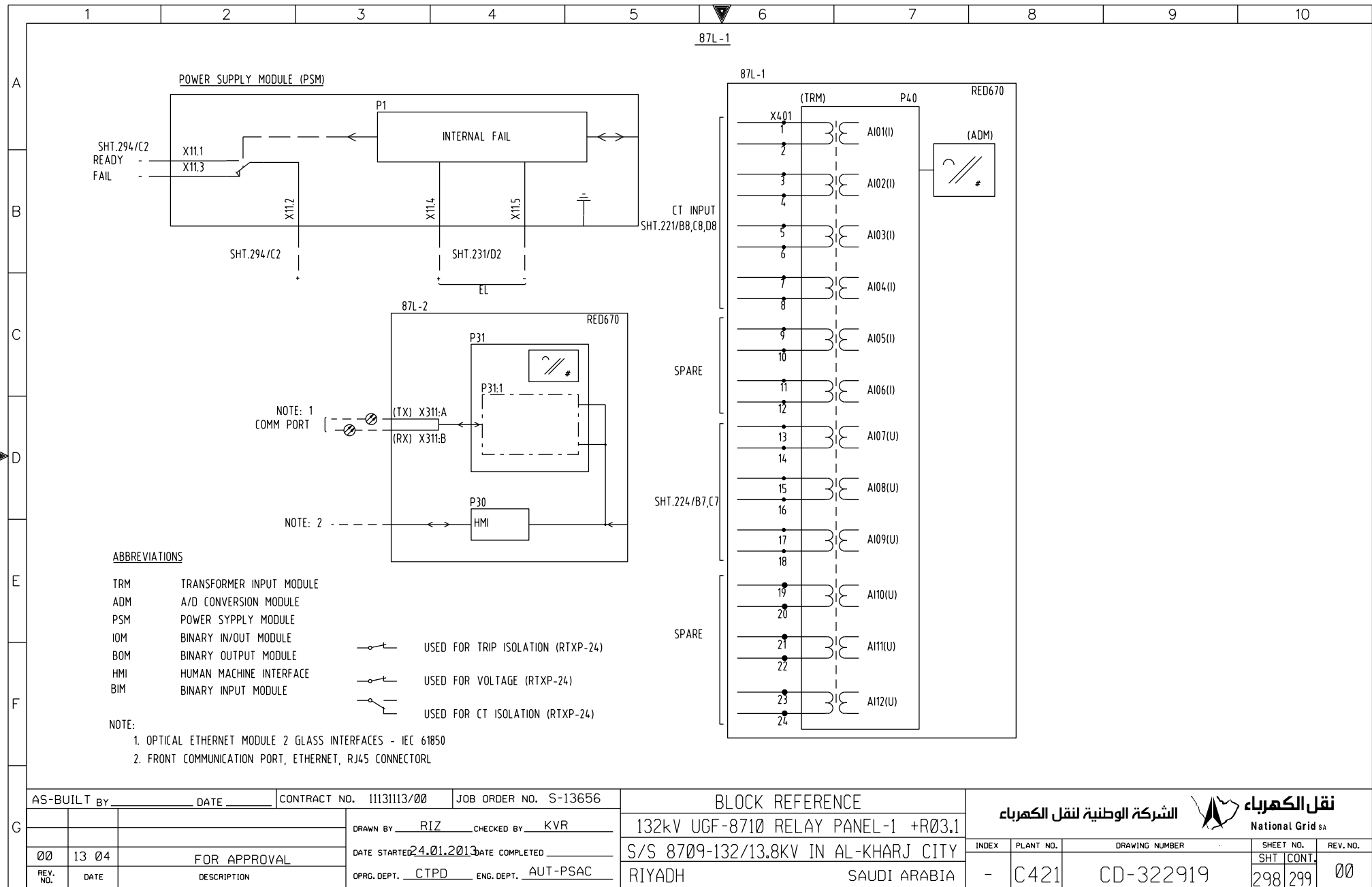


AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

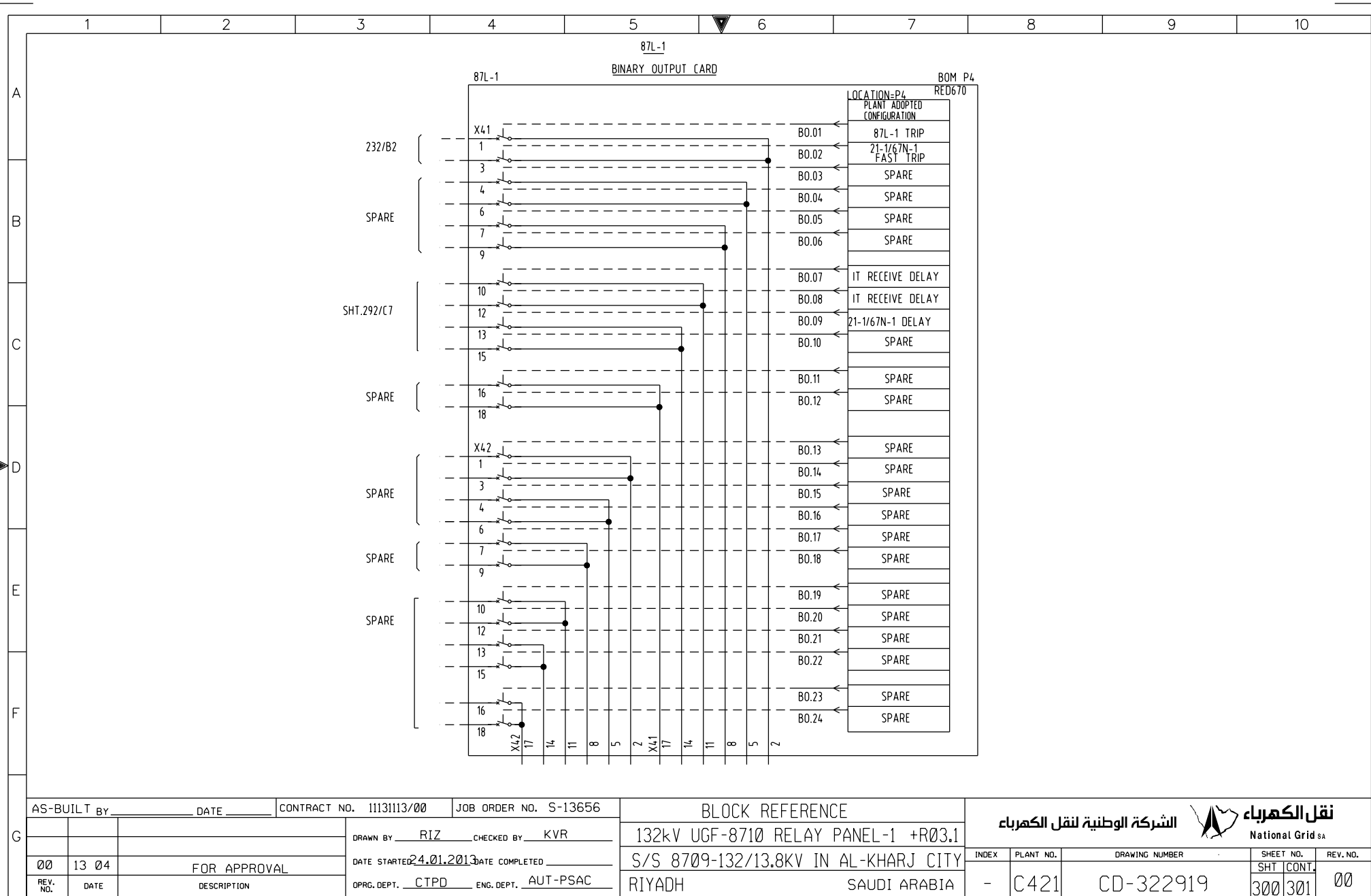
		FOR APPROVAL	DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>	
00	13 04		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>	

SPARE CONTACTS	
132kV UGF-8710 RELAY PANEL-1 +R03.1	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء		
				National Grid SA		
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
-	C421	CD-322919		SHT	CONT.	00
				295	298	



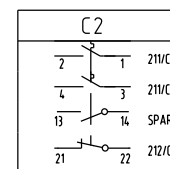
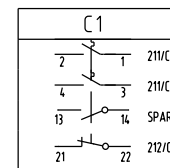
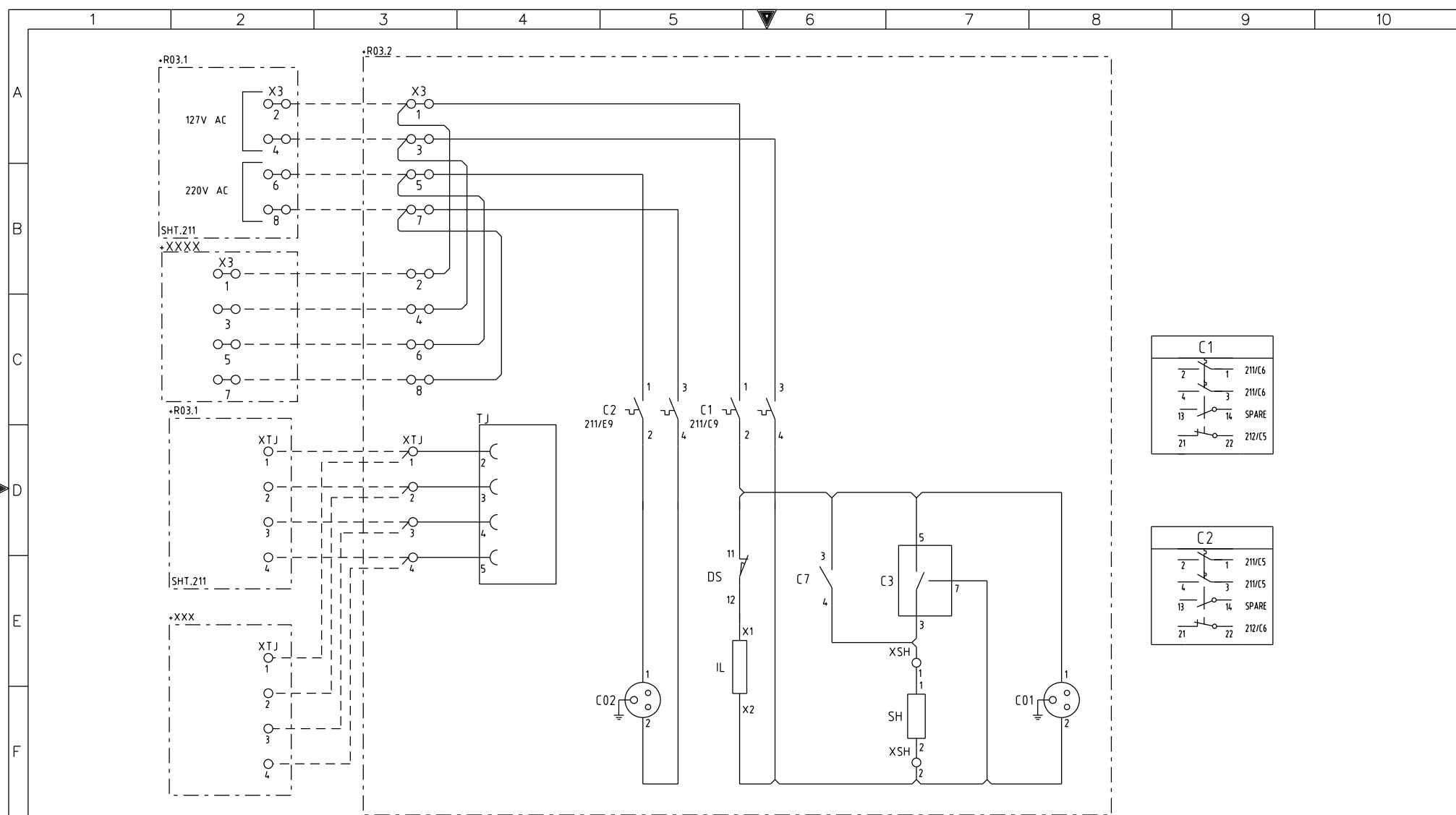
THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

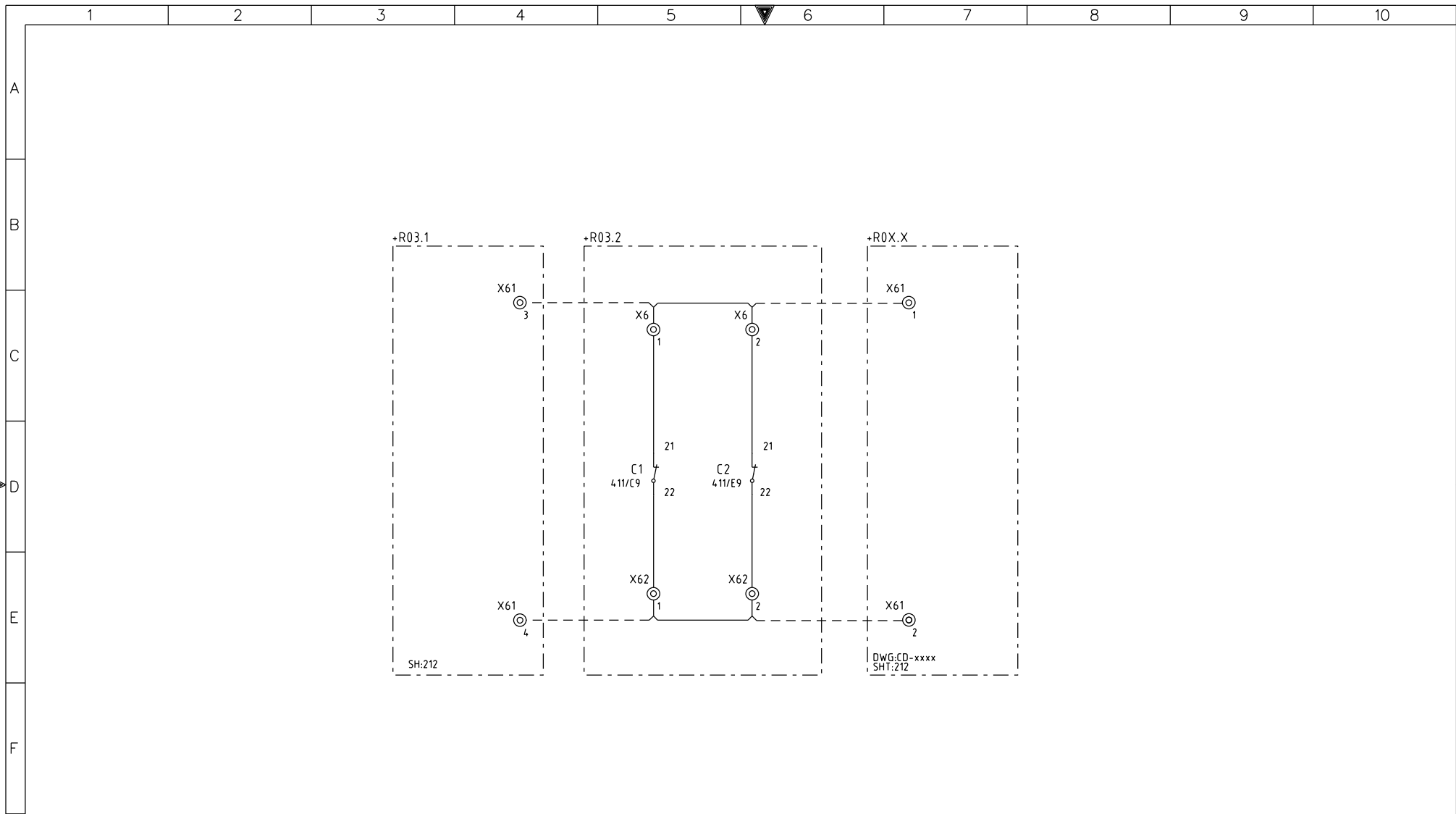
	1	2	3	4	5	6	7	8	9	10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
A	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:15%;">REFERENCE</th> <th style="width:15%;">X1 CT CKT.</th> <th style="width:15%;">REFERENCE</th> <th style="width:15%;">X2 VT CKT.</th> <th style="width:15%;">REFERENCE</th> <th style="width:15%;">X41 DC CKTS.</th> <th style="width:15%;">REFERENCE</th> <th style="width:15%;">X51 CON & PROTIN CKTS.</th> <th style="width:15%;">REFERENCE</th> <th style="width:15%;">X51 CON & PROTIN CKTS.</th> </tr> <tr><td>221/C5</td><td>1</td><td>222/B4</td><td>1</td><td>216/B3</td><td>1</td><td>216/E7</td><td>1</td><td>292/B6</td><td>51</td></tr> <tr><td>221/C5</td><td>2</td><td>222/B4</td><td>2</td><td>216/B3</td><td>2</td><td>216/E7</td><td>2</td><td>292/B7</td><td>52</td></tr> <tr><td>221/C5</td><td>3</td><td>222/C4</td><td>3</td><td>216/C3</td><td>3</td><td>231/D3</td><td>3</td><td>292/F7</td><td>53</td></tr> <tr><td>221/D5</td><td>4</td><td>SPARE</td><td>4</td><td>216/C3</td><td>4</td><td>231/D4</td><td>4</td><td>292/B8</td><td>54</td></tr> <tr><td>221/D5</td><td>5</td><td></td><td>5</td><td>216/C3</td><td>5</td><td>231/D4</td><td>5</td><td>292/B9</td><td>55</td></tr> <tr><td>221/D5</td><td>6</td><td></td><td>6</td><td>216/C3</td><td>6</td><td>231/D5</td><td>6</td><td>292/F9</td><td>56</td></tr> <tr><td>221/D5</td><td>7</td><td></td><td>7</td><td>216/C7</td><td>7</td><td>231/D6</td><td>7</td><td>292/B10</td><td>57</td></tr> <tr><td>221/D5</td><td>8</td><td></td><td>8</td><td>216/C7</td><td>8</td><td>231/D6</td><td>8</td><td>292/F10</td><td>58</td></tr> <tr><td>221/D5</td><td>9</td><td></td><td>9</td><td>216/C7</td><td>9</td><td>231/D7</td><td>9</td><td>293/B4</td><td>59</td></tr> <tr><td>SPARE</td><td>10</td><td></td><td>10</td><td>216/C7</td><td>10</td><td>231/D8</td><td>10</td><td>293/E4</td><td>60</td></tr> <tr><td></td><td></td><td></td><td></td><td>SPARE</td><td>11</td><td>SPARE</td><td>11</td><td>SPARE</td><td>61</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>12</td><td>SPARE</td><td>12</td><td>SPARE</td><td>62</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>13</td><td>SPARE</td><td>13</td><td>SPARE</td><td>63</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>14</td><td>276/A2</td><td>14</td><td>SPARE</td><td>64</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>15</td><td>276/F2</td><td>15</td><td>SPARE</td><td>65</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>16</td><td>276/A7</td><td>16</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>17</td><td>276/F7</td><td>17</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>18</td><td>276/A2</td><td>18</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>19</td><td>276/E2</td><td>19</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>20</td><td>276/A4</td><td>20</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>21</td><td>276/E4</td><td>21</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>22</td><td>276/A5</td><td>22</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>23</td><td>276/E5</td><td>23</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>24</td><td>276/E5</td><td>24</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>25</td><td>271/A4</td><td>25</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>26</td><td>271/F4</td><td>26</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>27</td><td>271/A7</td><td>27</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>28</td><td>271/F7</td><td>28</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>29</td><td>271/A5</td><td>29</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>30</td><td>271/F5</td><td>30</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>31</td><td>291/A4</td><td>31</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>291/C4</td><td>32</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>291/E4</td><td>33</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>291/A6</td><td>34</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>291/C6</td><td>35</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>291/A7</td><td>36</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>291/C7</td><td>37</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>291/A8</td><td>38</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>291/B8</td><td>39</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>291/A10</td><td>40</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>291/B10</td><td>41</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>292/B1</td><td>42</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>292/F1</td><td>43</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>292/B2</td><td>44</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>292/F2</td><td>45</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>292/B3</td><td>46</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>292/F3</td><td>47</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>292/B4</td><td>48</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>292/B5</td><td>49</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>292/F5</td><td>50</td><td></td><td></td></tr> </table>										REFERENCE	X1 CT CKT.	REFERENCE	X2 VT CKT.	REFERENCE	X41 DC CKTS.	REFERENCE	X51 CON & PROTIN CKTS.	REFERENCE	X51 CON & PROTIN CKTS.	221/C5	1	222/B4	1	216/B3	1	216/E7	1	292/B6	51	221/C5	2	222/B4	2	216/B3	2	216/E7	2	292/B7	52	221/C5	3	222/C4	3	216/C3	3	231/D3	3	292/F7	53	221/D5	4	SPARE	4	216/C3	4	231/D4	4	292/B8	54	221/D5	5		5	216/C3	5	231/D4	5	292/B9	55	221/D5	6		6	216/C3	6	231/D5	6	292/F9	56	221/D5	7		7	216/C7	7	231/D6	7	292/B10	57	221/D5	8		8	216/C7	8	231/D6	8	292/F10	58	221/D5	9		9	216/C7	9	231/D7	9	293/B4	59	SPARE	10		10	216/C7	10	231/D8	10	293/E4	60					SPARE	11	SPARE	11	SPARE	61						12	SPARE	12	SPARE	62						13	SPARE	13	SPARE	63						14	276/A2	14	SPARE	64						15	276/F2	15	SPARE	65						16	276/A7	16								17	276/F7	17								18	276/A2	18								19	276/E2	19								20	276/A4	20								21	276/E4	21								22	276/A5	22								23	276/E5	23								24	276/E5	24								25	271/A4	25								26	271/F4	26								27	271/A7	27								28	271/F7	28								29	271/A5	29								30	271/F5	30								31	291/A4	31									291/C4	32									291/E4	33									291/A6	34									291/C6	35									291/A7	36									291/C7	37									291/A8	38									291/B8	39									291/A10	40									291/B10	41									292/B1	42									292/F1	43									292/B2	44									292/F2	45									292/B3	46									292/F3	47									292/B4	48									292/B5	49									292/F5	50		
REFERENCE	X1 CT CKT.	REFERENCE	X2 VT CKT.	REFERENCE	X41 DC CKTS.	REFERENCE	X51 CON & PROTIN CKTS.	REFERENCE	X51 CON & PROTIN CKTS.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
221/C5	1	222/B4	1	216/B3	1	216/E7	1	292/B6	51																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
221/C5	2	222/B4	2	216/B3	2	216/E7	2	292/B7	52																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
221/C5	3	222/C4	3	216/C3	3	231/D3	3	292/F7	53																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
221/D5	4	SPARE	4	216/C3	4	231/D4	4	292/B8	54																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
221/D5	5		5	216/C3	5	231/D4	5	292/B9	55																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
221/D5	6		6	216/C3	6	231/D5	6	292/F9	56																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
221/D5	7		7	216/C7	7	231/D6	7	292/B10	57																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
221/D5	8		8	216/C7	8	231/D6	8	292/F10	58																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
221/D5	9		9	216/C7	9	231/D7	9	293/B4	59																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
SPARE	10		10	216/C7	10	231/D8	10	293/E4	60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
				SPARE	11	SPARE	11	SPARE	61																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					12	SPARE	12	SPARE	62																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					13	SPARE	13	SPARE	63																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					14	276/A2	14	SPARE	64																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					15	276/F2	15	SPARE	65																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					16	276/A7	16																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					17	276/F7	17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					18	276/A2	18																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					19	276/E2	19																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					20	276/A4	20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					21	276/E4	21																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					22	276/A5	22																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					23	276/E5	23																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					24	276/E5	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					25	271/A4	25																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					26	271/F4	26																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					27	271/A7	27																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					28	271/F7	28																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					29	271/A5	29																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					30	271/F5	30																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					31	291/A4	31																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						291/C4	32																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						291/E4	33																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						291/A6	34																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						291/C6	35																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						291/A7	36																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						291/C7	37																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						291/A8	38																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						291/B8	39																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						291/A10	40																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						291/B10	41																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						292/B1	42																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						292/F1	43																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						292/B2	44																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						292/F2	45																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						292/B3	46																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						292/F3	47																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						292/B4	48																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						292/B5	49																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
						292/F5	50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
B																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
D																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
E																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
F																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
G																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

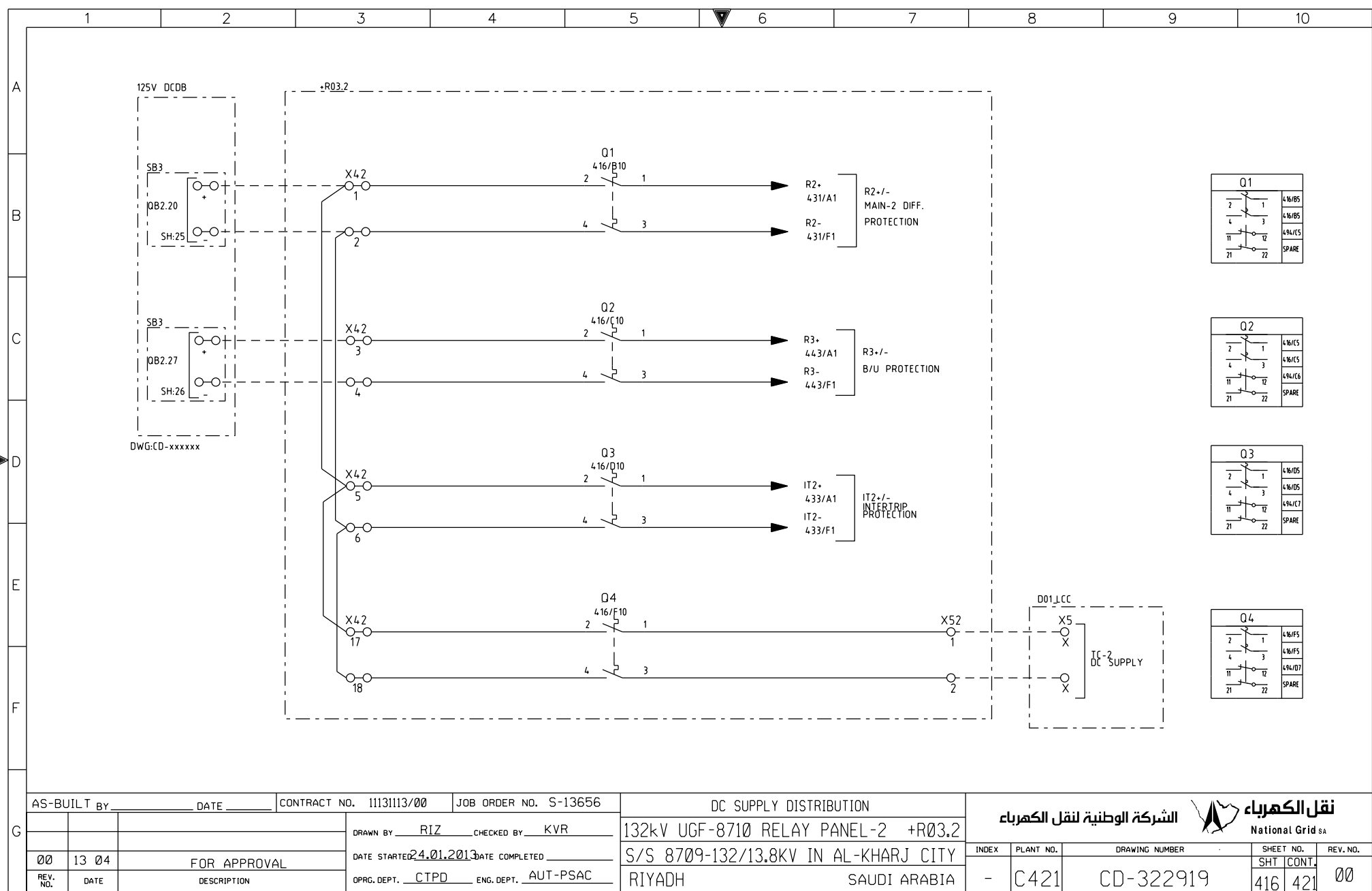


</

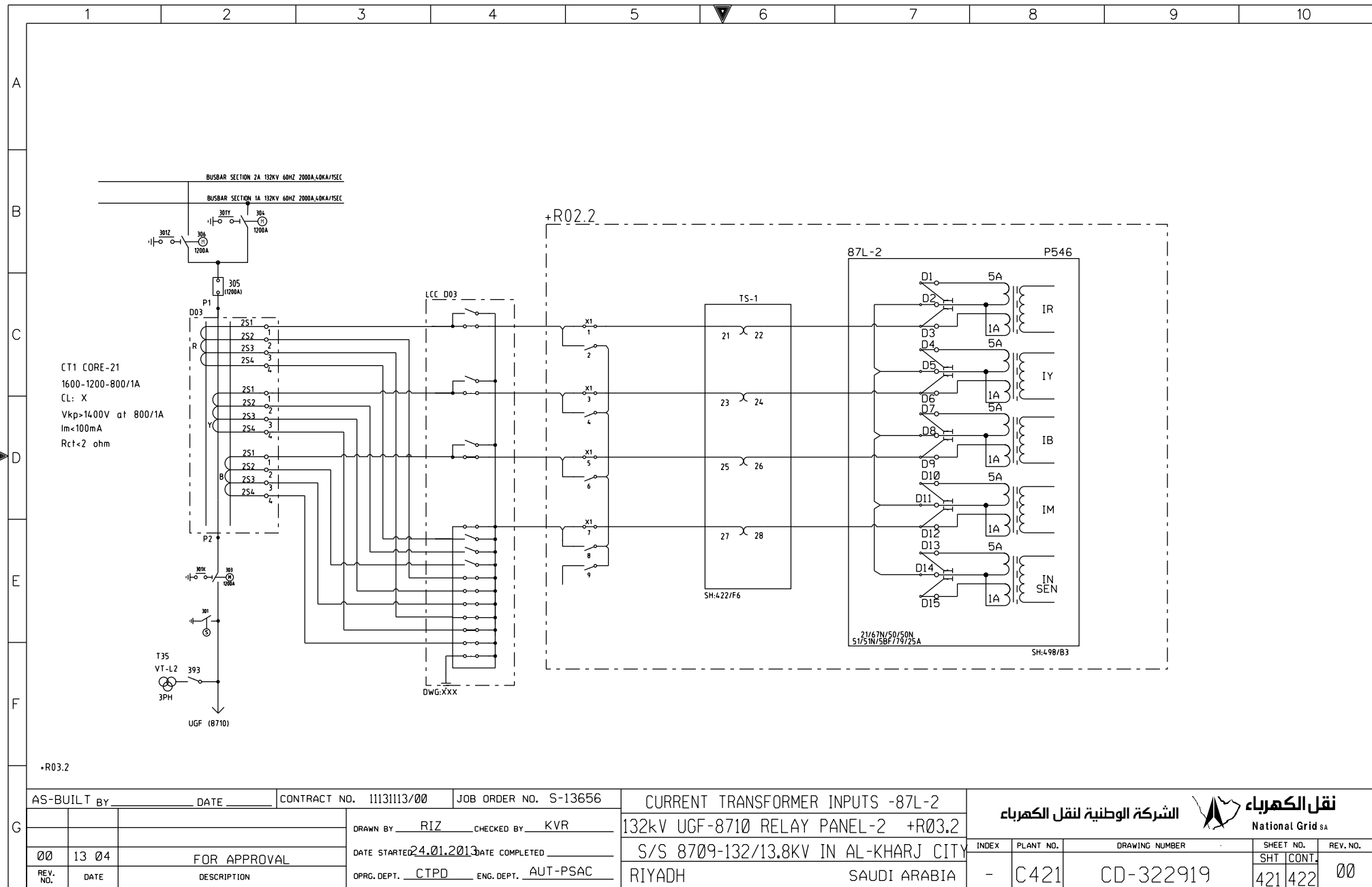
THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



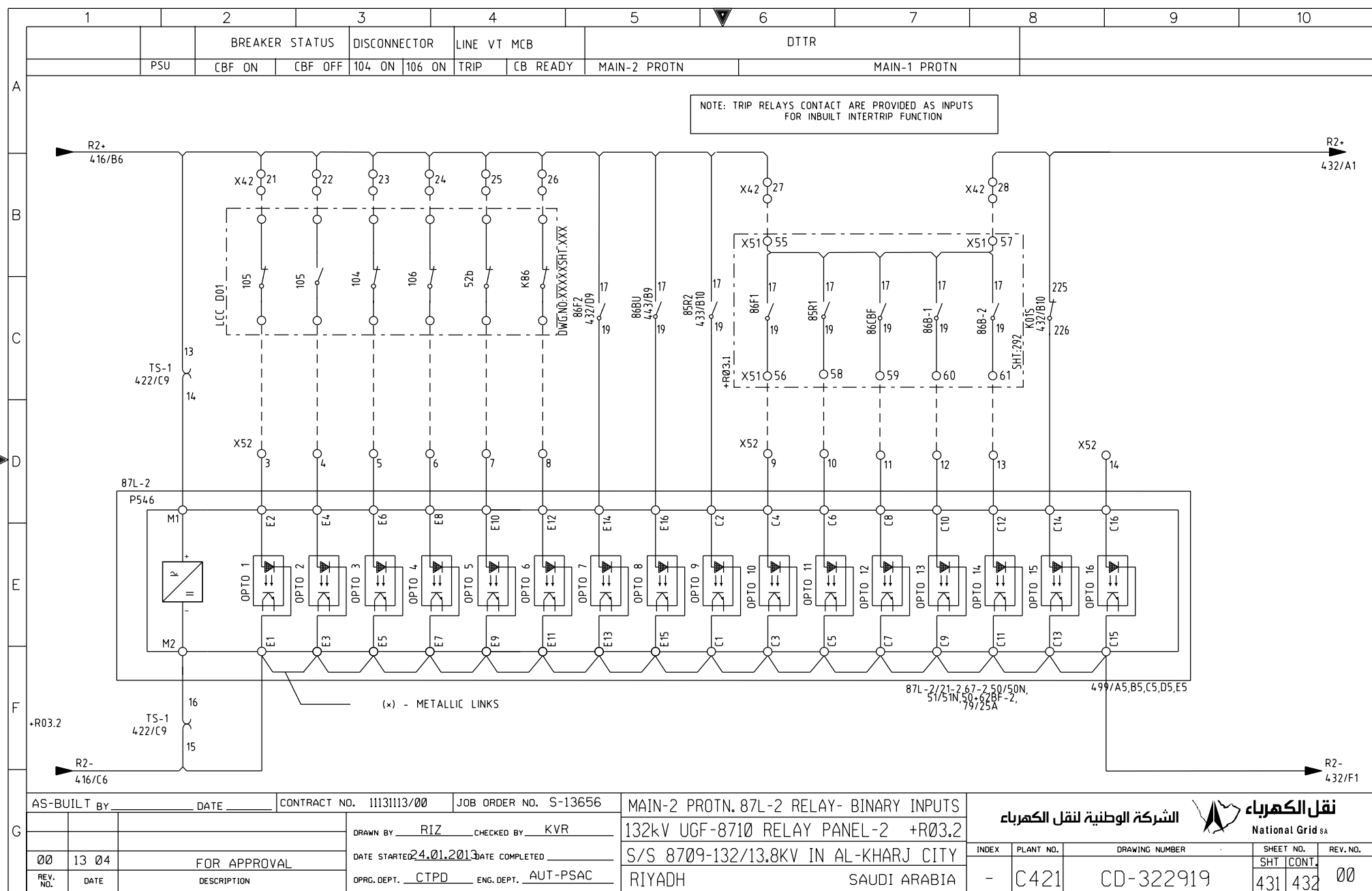
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		AC MCB AUX CONTACTS			
			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2			
			DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY			
			OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA			
00	13 04	FOR APPROVAL					INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
REV. NO.	DATE	DESCRIPTION					-	C421	CD-322919	SHT 1CONT.
										412 416
										00



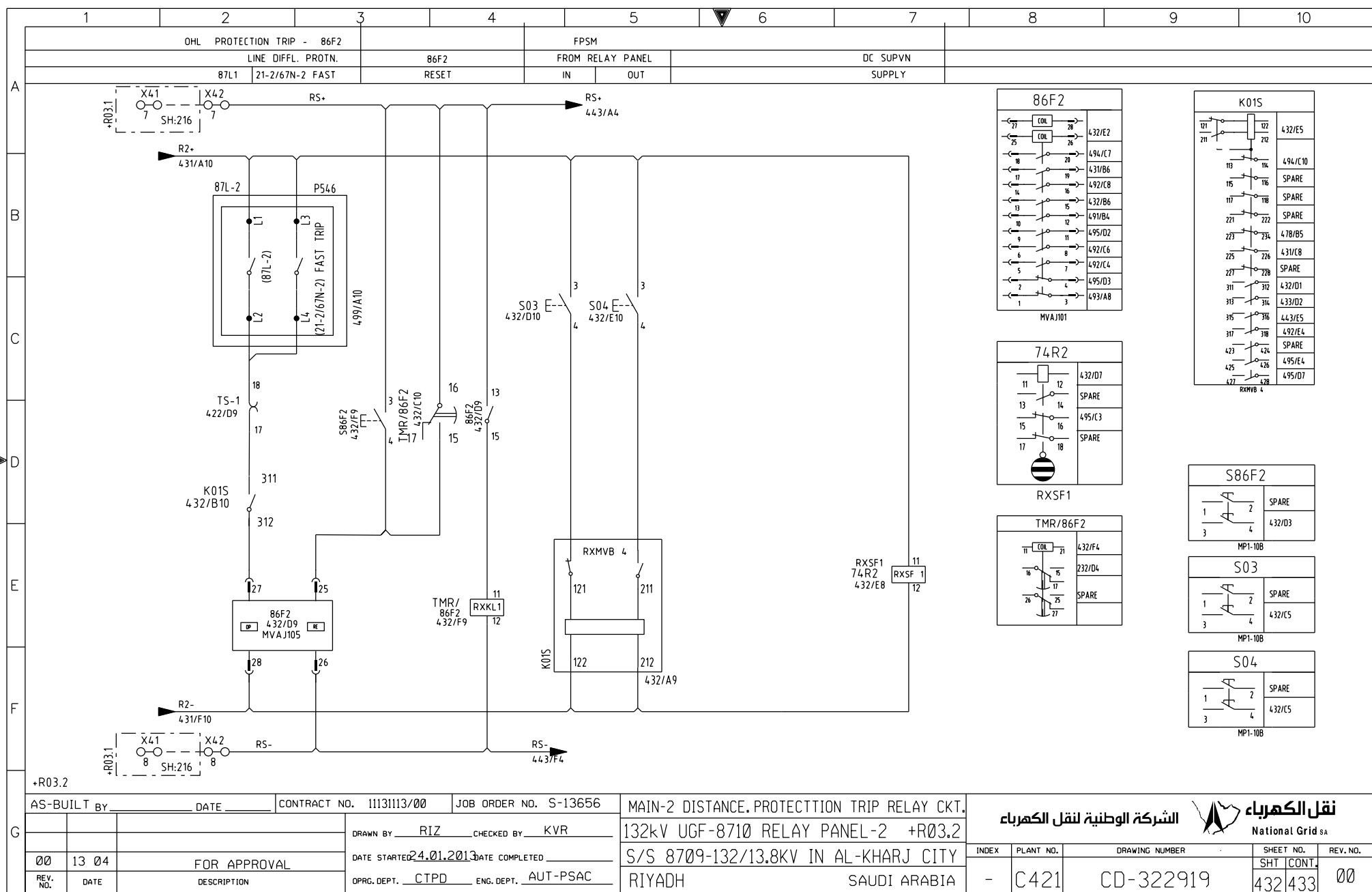
THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



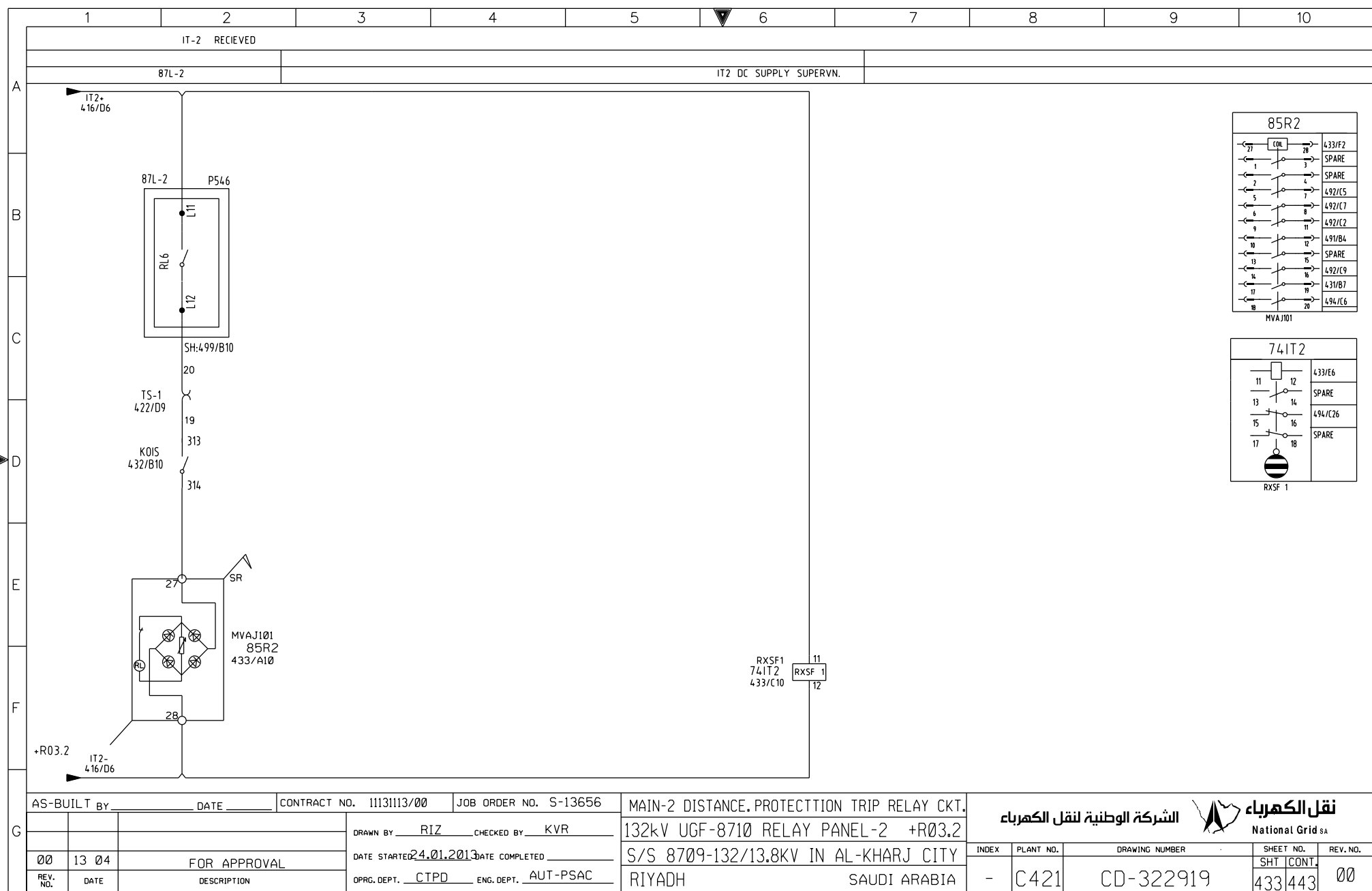
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		MAIN-2 PROTN. 87L-2 RELAY- BINARY INPUTS 132kV UGF-8710 RELAY PANEL-2 +R03.2 S/S 8709-132/13.8KV IN AL-KHARJ CITY RIYADH SAUDI ARABIA		<div style="text-align: right;"> نقل الكهرباء National Grid SA </div>	
DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.					
00	13 04	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		C421		CD-322919	
REV. NO.	DATE	DESCRIPTION						431 432 00 NG/D2-D (2012/01) DMS VECTOR NGD200	



THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

AS-BUILT BY _____		DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		MAIN-2 DISTANCE.PROTECTION TRIP RELAY CKT.	
				DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2	
				DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY	
				OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA	

نقل الكهرباء National Grid SA				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	432/433	00



THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

AS-BUILT BY

DATE

CONTRACT NO.

11131113/00

JOB ORDER NO.

S-13656

00

13 04

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY

RIZ

CHECKED BY

KVR

DATE STARTED

24.01.2013

DATE COMPLETED

OPRG. DEPT.

CTPD

ENG. DEPT.

AUT-PSAC

MAIN-2 DISTANCE.PROTECTION TRIP RELAY CKT.


132kV UGF-8710 RELAY PANEL-2 +R03.2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

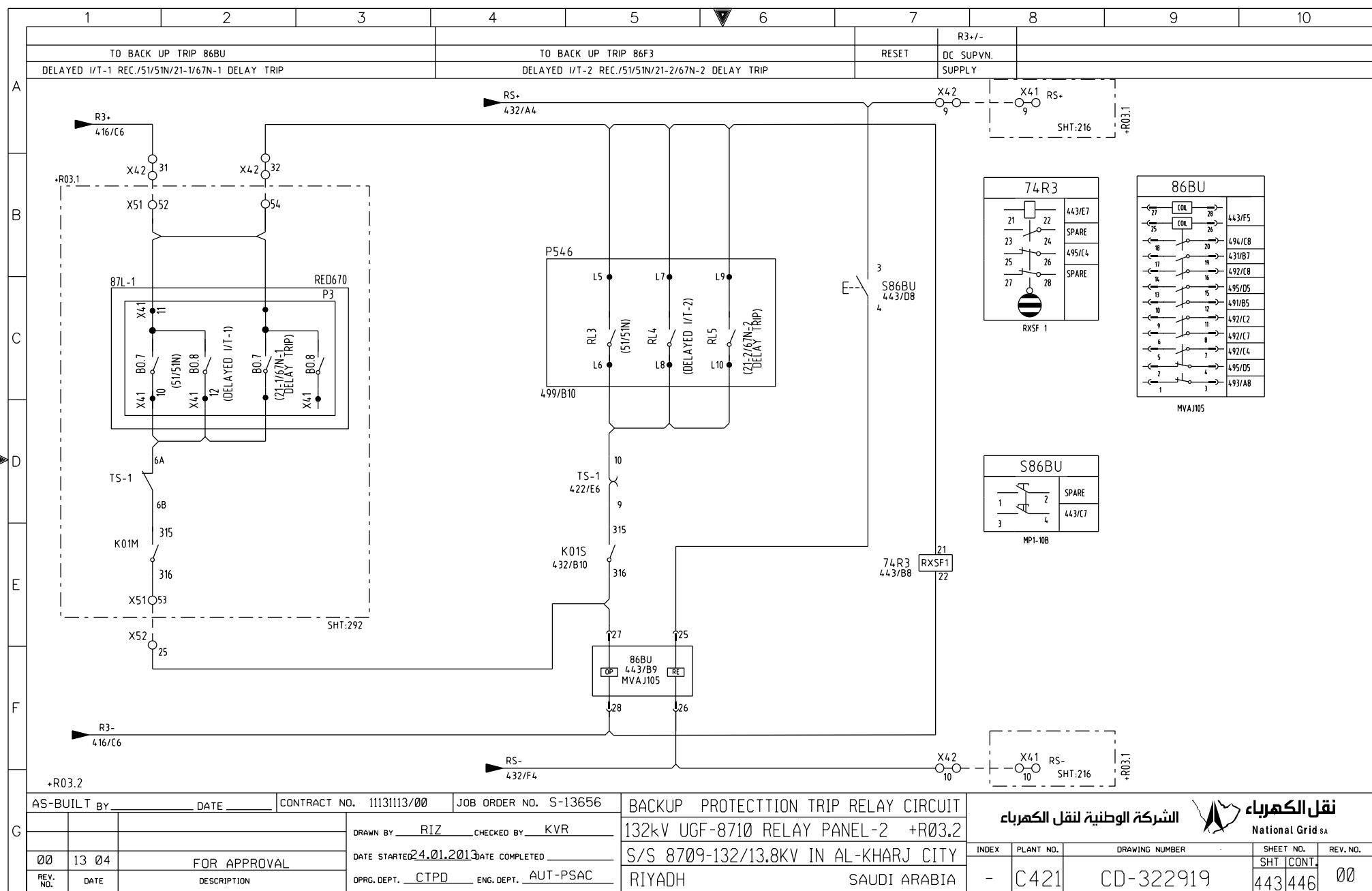
نقل الكهرباء

الشركة الوطنية لنقل الكهرباء

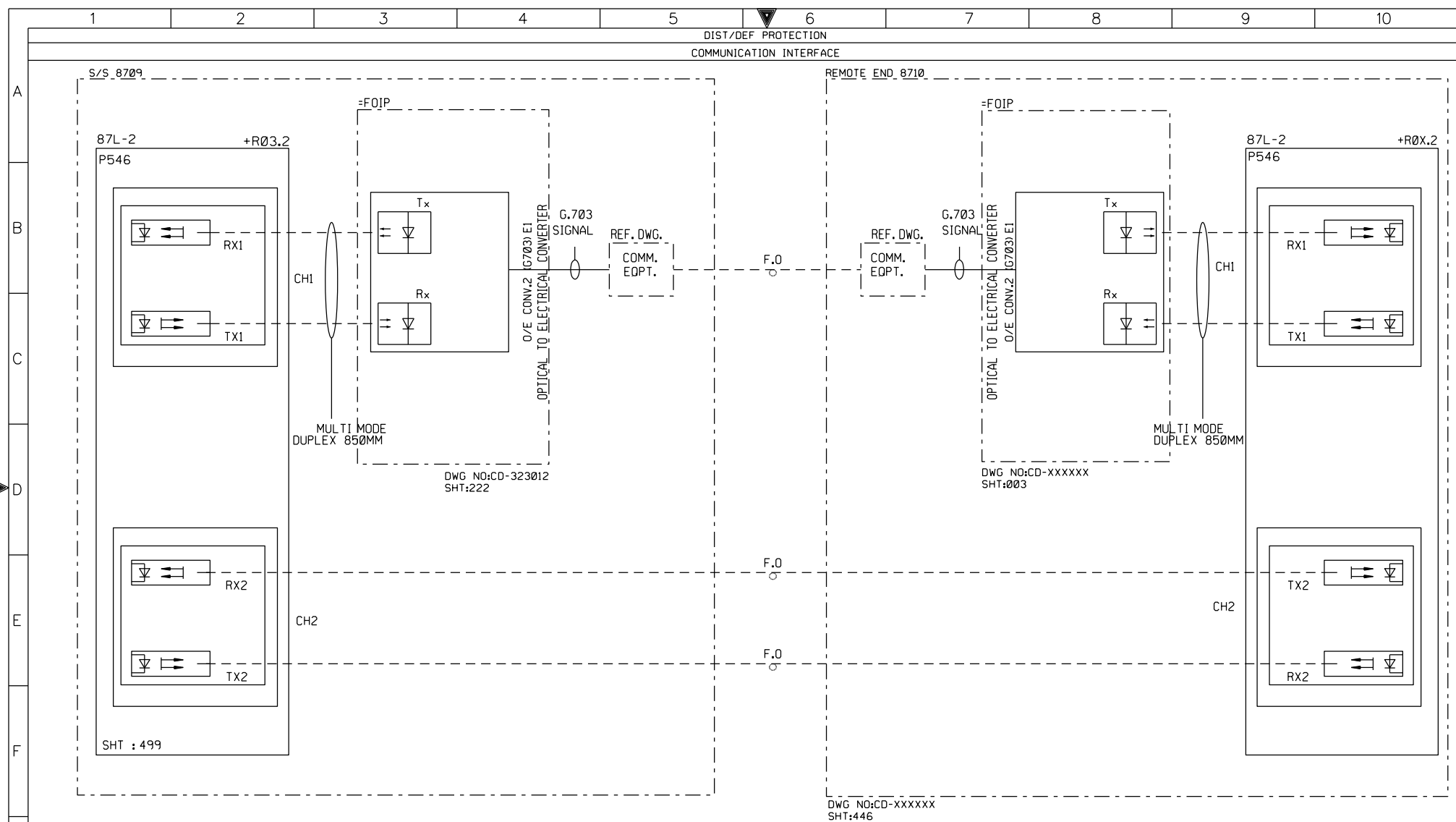


National Grid SA

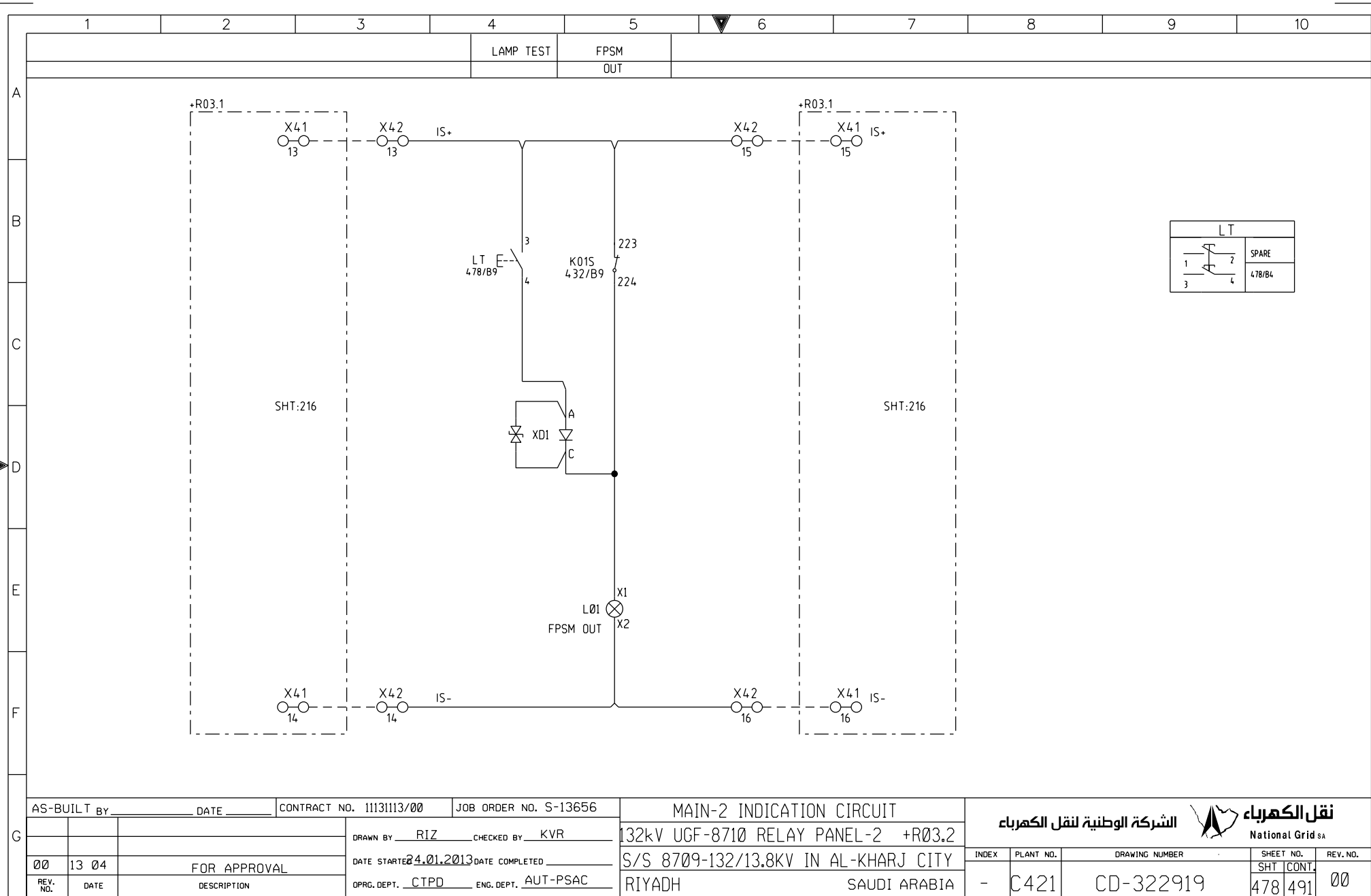
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	433/443	00



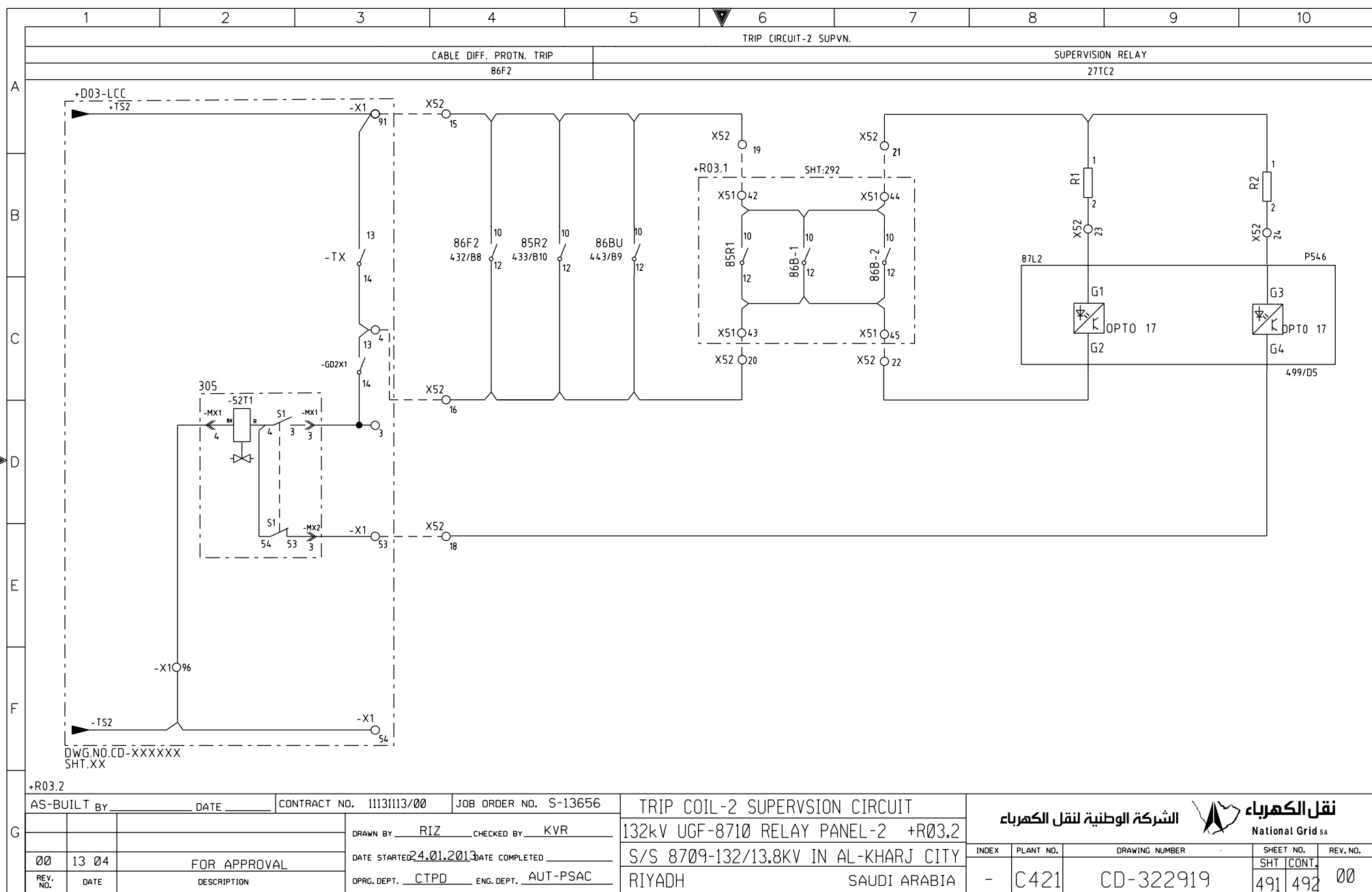
THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED WITHOUT THE WRITTEN CONSENT OF ITS OWNER.




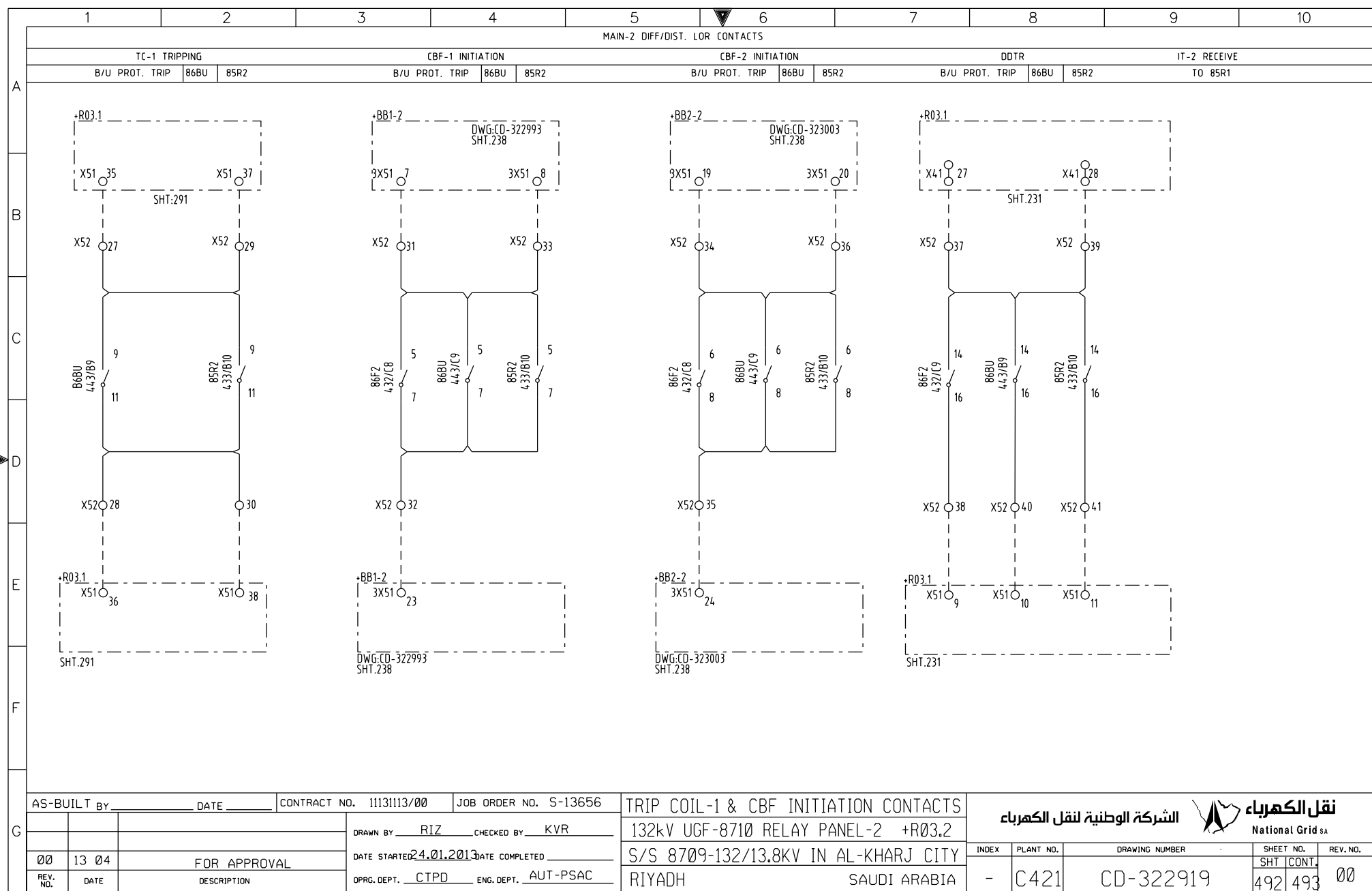
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	COMMUNICATION INTERFACE		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		National Grid SA			
		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
00		FOR APPROVAL		RIYADH SAUDI ARABIA		-	C421	CD-322919	446/478
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC					



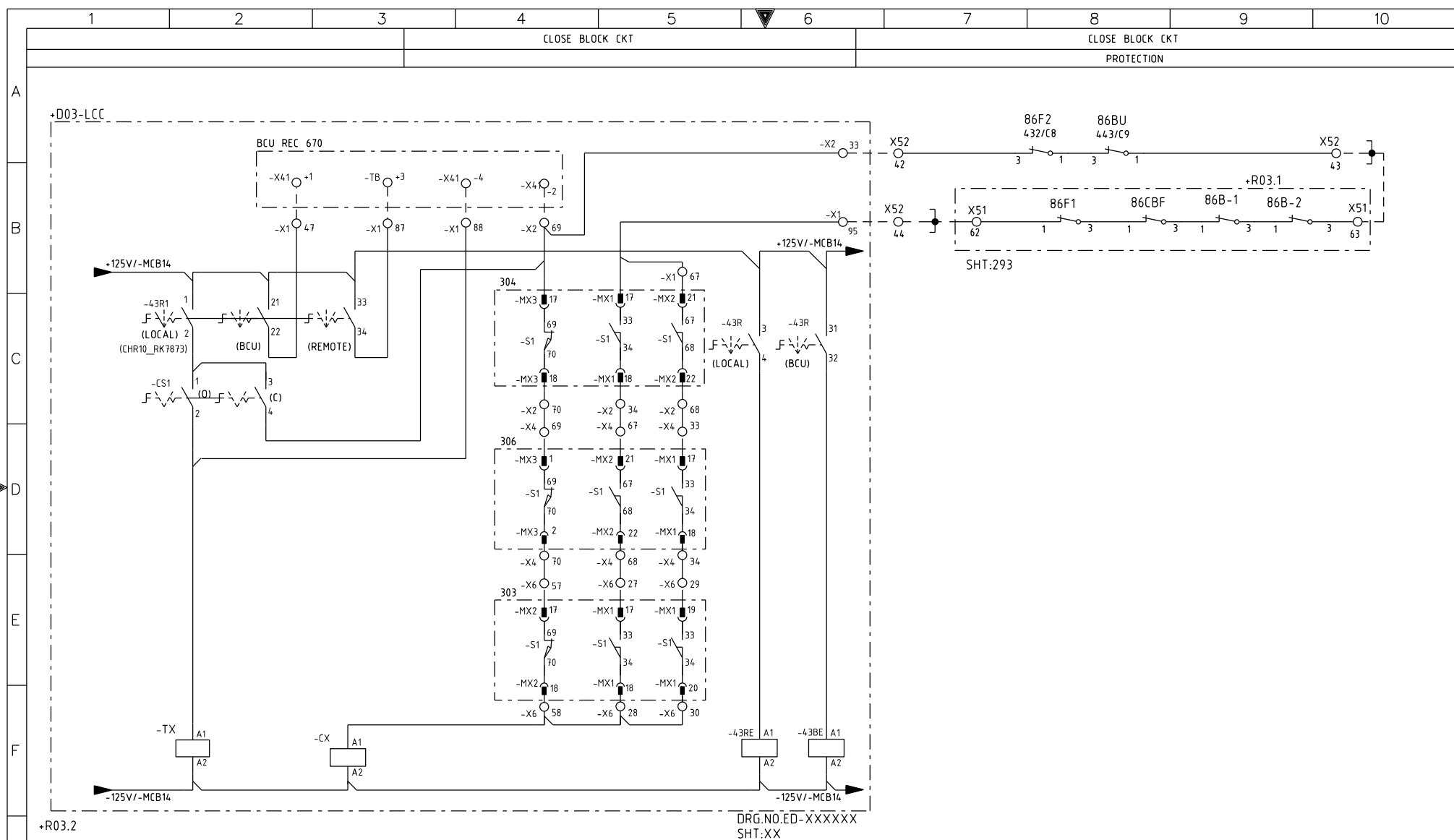
THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



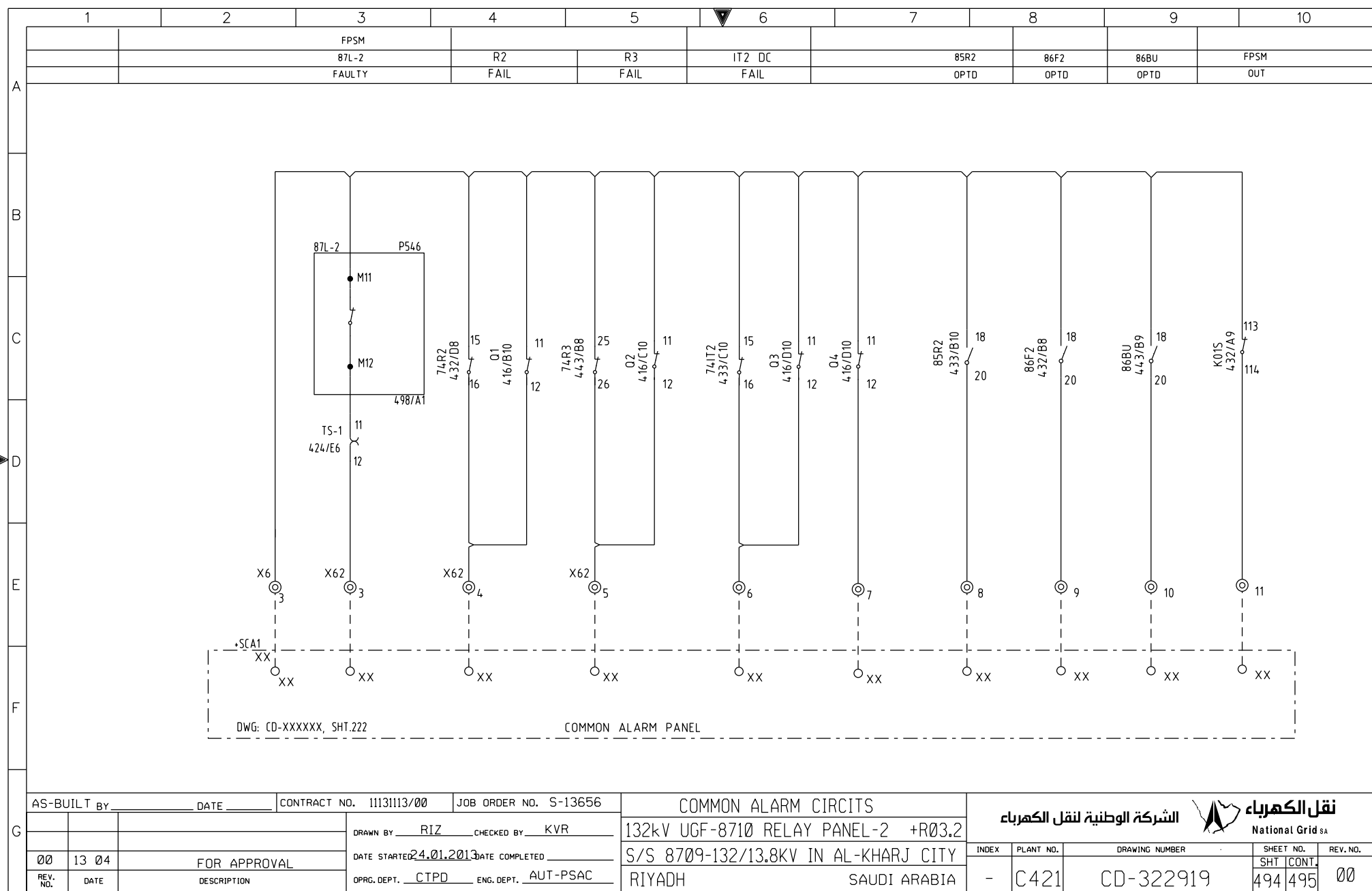
+R03.2			AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00			JOB ORDER NO. S-13656			TRIP COIL-2 SUPERVISION CIRCUIT			<div> <div>الشركة الوطنية لنقل الكهرباء</div> <div>  <div> <div>نقل الكهرباء</div> <div>National Grid SA</div> </div> </div> </div>		
						DRAWN BY RIZ			CHECKED BY KVR			132kV UGF-8710 RELAY PANEL-2 +R03.2					
						DATE STARTED 24.01.2013			DATE COMPLETED _____			S/S 8709-132/13.8KV IN AL-KHARJ CITY			INDEX		
						PRG. DEPT. CTPD			ENG. DEPT. AUT-PSAC			RIYADH			PLANT NO.		
												SAUDI ARABIA			DRAWING NUMBER		
															SHEET NO.		
															SHT (CONT.)		
															REV. NO.		
															491		
															492		
															00		



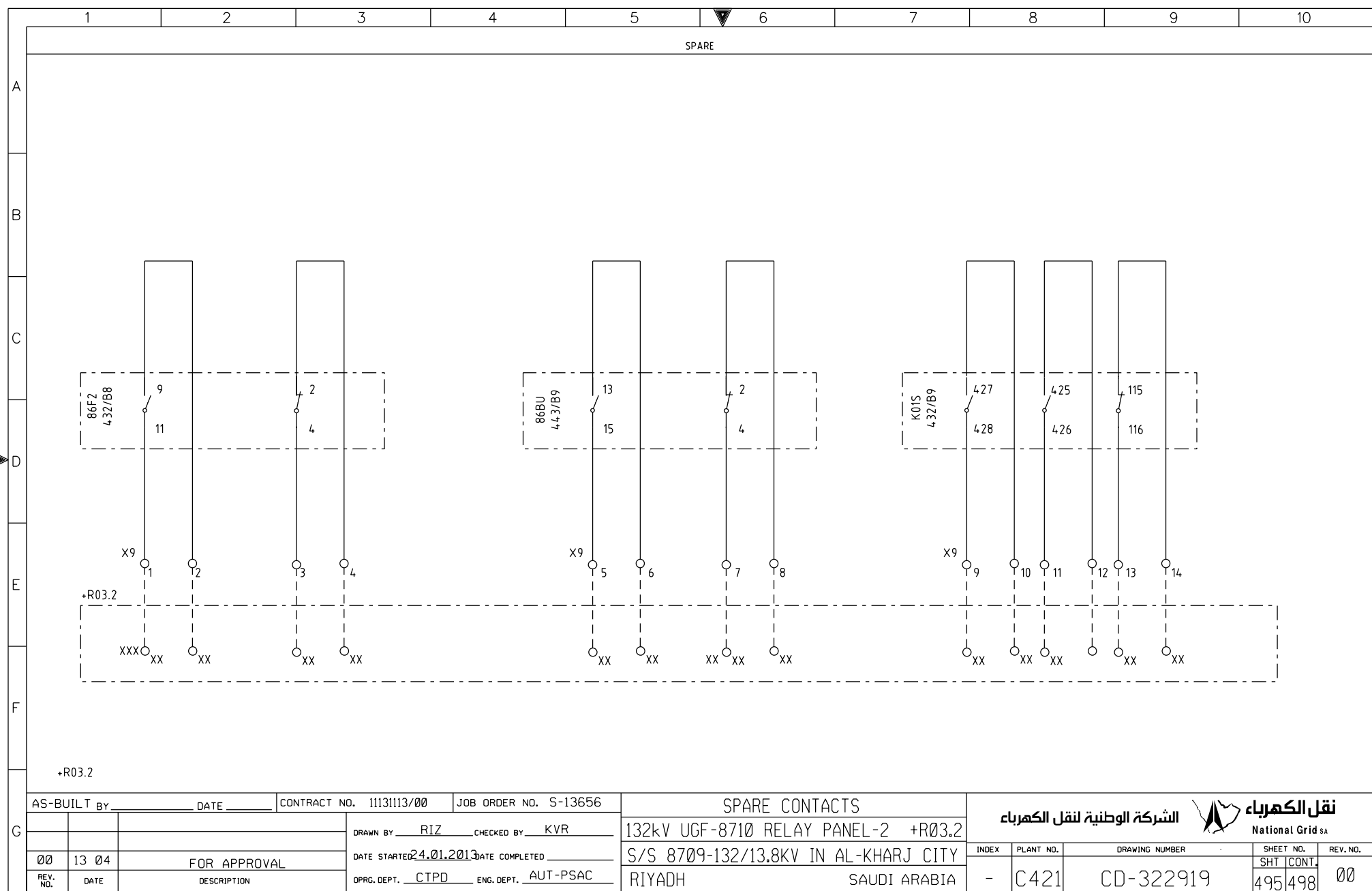
THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CLOSING CIRCUIT		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
		DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		National Grid SA			
00		13 04		FOR APPROVAL		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.	
REV. NO.		DATE		DESCRIPTION		R03.2		DRAWING NUMBER		SHEET NO.	
						SAUDI ARABIA		CD-322919		SHT CONT.	
								493 494		00	

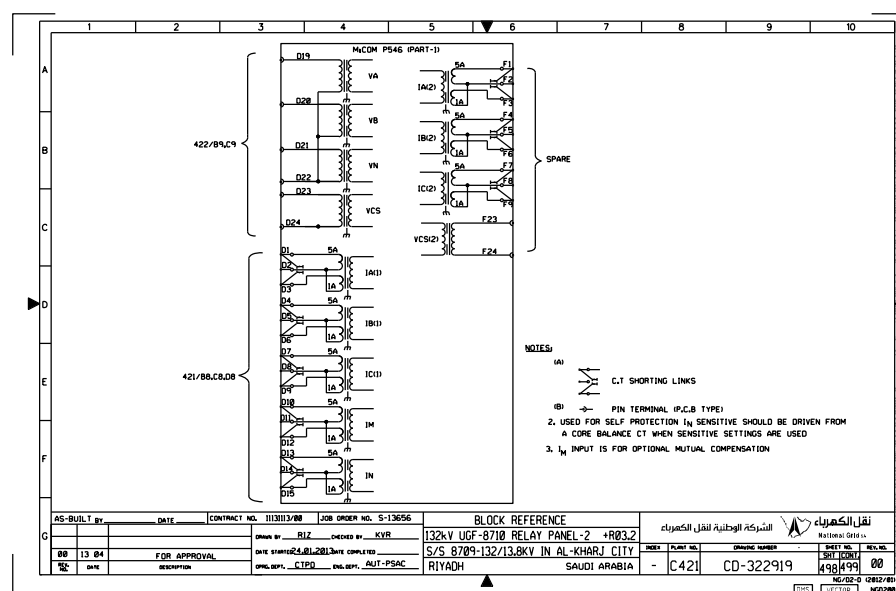


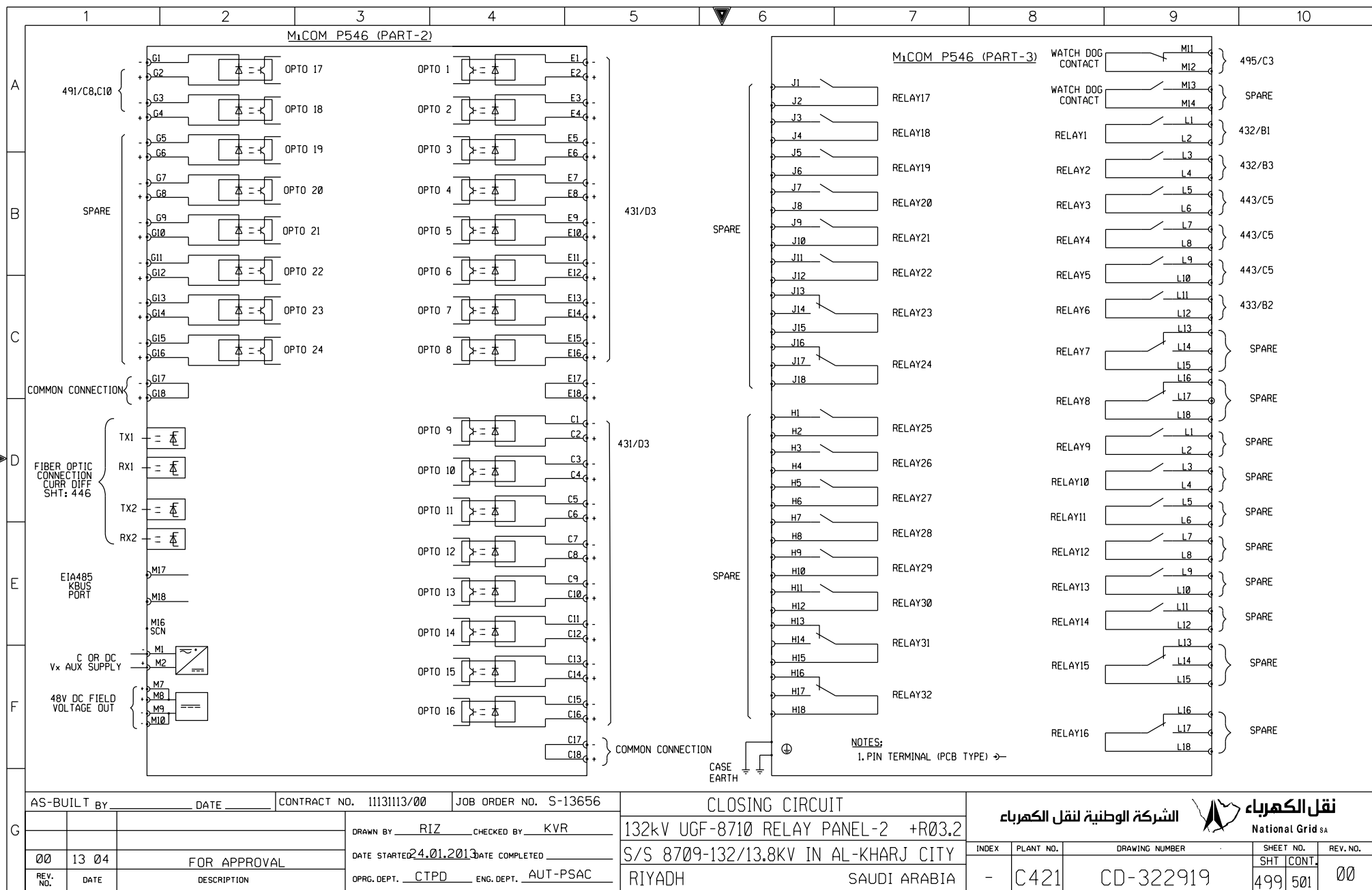
THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	SPARE CONTACTS		<div style="display: flex; align-items: center;"> <div style="font-size: 2em; margin-right: 10px;">🇸🇦</div> <div> نقل الكهرباء National Grid SA </div> </div>				
		DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		132kV UGF-8710 RELAY PANEL-2 +R03.2						
		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. <u>CTPD</u>	ENG. DEPT. <u>AUT-PSAC</u>	-	C421	CD-322919	495/498	00

NG/D2-D (2012/01)
DMS
VECTOR
NGD200





THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

	1	2	3	4	5	6	7	8	9	10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
A	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:15%;">REFERENCE</td> <td style="width:15%;">X1 CT CKT.</td> <td style="width:15%;">REFERENCE</td> <td style="width:15%;">X2 VT CKT.</td> <td style="width:15%;">REFERENCE</td> <td style="width:15%;">X42 DC CKTS.</td> <td style="width:15%;">REFERENCE</td> <td style="width:15%;">X52 CONTROL & PROTIN CKTS.</td> <td style="width:15%;">REFERENCE</td> <td style="width:15%;">X9 SPARE</td> </tr> <tr><td>421/C5</td><td>1</td><td>422/B6</td><td>1</td><td>416/B3</td><td>1</td><td>416/F7</td><td>1</td><td>495/E1</td><td>1</td></tr> <tr><td>421/C5</td><td>2</td><td>422/B6</td><td>2</td><td>416/B3</td><td>2</td><td>416/F7</td><td>2</td><td>495/E2</td><td>2</td></tr> <tr><td>421/C5</td><td>3</td><td>422/C6</td><td>3</td><td>416/C3</td><td>3</td><td>431/D4</td><td>3</td><td>495/E3</td><td>3</td></tr> <tr><td>421/C5</td><td>4</td><td>422/C6</td><td>4</td><td>416/C3</td><td>4</td><td>431/D4</td><td>4</td><td>495/E3</td><td>4</td></tr> <tr><td>421/D5</td><td>5</td><td>SPARE</td><td>5</td><td>416/C3</td><td>5</td><td>431/D5</td><td>5</td><td>495/E5</td><td>5</td></tr> <tr><td>421/D5</td><td>6</td><td></td><td></td><td>416/C3</td><td>6</td><td>431/D6</td><td>6</td><td>495/E5</td><td>6</td></tr> <tr><td>421/D5</td><td>7</td><td></td><td></td><td>432/A2</td><td>7</td><td>431/D6</td><td>7</td><td>495/E6</td><td>7</td></tr> <tr><td>421/D5</td><td>8</td><td></td><td></td><td>432/F2</td><td>8</td><td>431/D7</td><td>8</td><td>495/E6</td><td>8</td></tr> <tr><td>421/E5</td><td>9</td><td></td><td></td><td>443/A4</td><td>9</td><td>431/D8</td><td>9</td><td>495/E7</td><td>9</td></tr> <tr><td>SPARE</td><td>10</td><td></td><td></td><td>443/F4</td><td>10</td><td>432/C4</td><td>10</td><td>495/E8</td><td>10</td></tr> <tr><td></td><td></td><td></td><td></td><td>SPARE</td><td>11</td><td>432/C4</td><td>11</td><td>495/E8</td><td>11</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>12</td><td>443/F2</td><td>12</td><td>495/E8</td><td>12</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>13</td><td>SPARE</td><td>13</td><td>495/E9</td><td>13</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>14</td><td>491/A4</td><td>14</td><td>495/E9</td><td>14</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>15</td><td>491/C4</td><td>15</td><td>SPARE</td><td>15</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>16</td><td>491/E4</td><td>16</td><td>SPARE</td><td>16</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>17</td><td>491/A6</td><td>17</td><td>SPARE</td><td>17</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>18</td><td>491/C6</td><td>18</td><td>SPARE</td><td>18</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>19</td><td>491/A7</td><td>19</td><td>SPARE</td><td>19</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>20</td><td>491/C7</td><td>20</td><td>SPARE</td><td>20</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>21</td><td>491/A8</td><td>21</td><td>SPARE</td><td>21</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>22</td><td>491/B8</td><td>22</td><td>SPARE</td><td>22</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>23</td><td>491/A10</td><td>23</td><td>SPARE</td><td>23</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>24</td><td>443/B10</td><td>24</td><td>SPARE</td><td>24</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>25</td><td>SPARE</td><td>25</td><td>SPARE</td><td>25</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>26</td><td>492/B2</td><td>26</td><td>SPARE</td><td>26</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>27</td><td>492/D2</td><td>27</td><td>SPARE</td><td>27</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>28</td><td>492/B3</td><td>28</td><td>SPARE</td><td>28</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>29</td><td>492/D3</td><td>29</td><td>SPARE</td><td>29</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>30</td><td>492/B4</td><td>30</td><td>SPARE</td><td>30</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>31</td><td>492/D4</td><td>31</td><td>SPARE</td><td>31</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>32</td><td>492/B5</td><td>32</td><td>SPARE</td><td>32</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>33</td><td>492/B6</td><td>33</td><td>SPARE</td><td>33</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>34</td><td>492/D6</td><td>34</td><td>SPARE</td><td>34</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>35</td><td>492/B7</td><td>35</td><td>SPARE</td><td>35</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>36</td><td>492/D8</td><td>36</td><td>SPARE</td><td>36</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>37</td><td>492/B9</td><td>37</td><td>SPARE</td><td>37</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>38</td><td>492/D9</td><td>38</td><td>SPARE</td><td>38</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>39</td><td>492/A7</td><td>39</td><td>SPARE</td><td>39</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>40</td><td>492/A10</td><td>40</td><td>SPARE</td><td>40</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>41</td><td>492/B7</td><td>41</td><td>SPARE</td><td>41</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>42</td><td>SPARE</td><td>42</td><td>SPARE</td><td>42</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>43</td><td>SPARE</td><td>43</td><td>SPARE</td><td>43</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>44</td><td>SPARE</td><td>44</td><td>SPARE</td><td>44</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>45</td><td>SPARE</td><td>45</td><td>SPARE</td><td>45</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>46</td><td>SPARE</td><td>46</td><td>SPARE</td><td>46</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>47</td><td>SPARE</td><td>47</td><td>SPARE</td><td>47</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>48</td><td>SPARE</td><td>48</td><td>SPARE</td><td>48</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>49</td><td>SPARE</td><td>49</td><td>SPARE</td><td>49</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>50</td><td>SPARE</td><td>50</td><td>SPARE</td><td>50</td></tr> </table>										REFERENCE	X1 CT CKT.	REFERENCE	X2 VT CKT.	REFERENCE	X42 DC CKTS.	REFERENCE	X52 CONTROL & PROTIN CKTS.	REFERENCE	X9 SPARE	421/C5	1	422/B6	1	416/B3	1	416/F7	1	495/E1	1	421/C5	2	422/B6	2	416/B3	2	416/F7	2	495/E2	2	421/C5	3	422/C6	3	416/C3	3	431/D4	3	495/E3	3	421/C5	4	422/C6	4	416/C3	4	431/D4	4	495/E3	4	421/D5	5	SPARE	5	416/C3	5	431/D5	5	495/E5	5	421/D5	6			416/C3	6	431/D6	6	495/E5	6	421/D5	7			432/A2	7	431/D6	7	495/E6	7	421/D5	8			432/F2	8	431/D7	8	495/E6	8	421/E5	9			443/A4	9	431/D8	9	495/E7	9	SPARE	10			443/F4	10	432/C4	10	495/E8	10					SPARE	11	432/C4	11	495/E8	11						12	443/F2	12	495/E8	12						13	SPARE	13	495/E9	13						14	491/A4	14	495/E9	14						15	491/C4	15	SPARE	15						16	491/E4	16	SPARE	16						17	491/A6	17	SPARE	17						18	491/C6	18	SPARE	18						19	491/A7	19	SPARE	19						20	491/C7	20	SPARE	20						21	491/A8	21	SPARE	21						22	491/B8	22	SPARE	22						23	491/A10	23	SPARE	23						24	443/B10	24	SPARE	24						25	SPARE	25	SPARE	25						26	492/B2	26	SPARE	26						27	492/D2	27	SPARE	27						28	492/B3	28	SPARE	28						29	492/D3	29	SPARE	29						30	492/B4	30	SPARE	30						31	492/D4	31	SPARE	31						32	492/B5	32	SPARE	32						33	492/B6	33	SPARE	33						34	492/D6	34	SPARE	34						35	492/B7	35	SPARE	35						36	492/D8	36	SPARE	36						37	492/B9	37	SPARE	37						38	492/D9	38	SPARE	38						39	492/A7	39	SPARE	39						40	492/A10	40	SPARE	40						41	492/B7	41	SPARE	41						42	SPARE	42	SPARE	42						43	SPARE	43	SPARE	43						44	SPARE	44	SPARE	44						45	SPARE	45	SPARE	45						46	SPARE	46	SPARE	46						47	SPARE	47	SPARE	47						48	SPARE	48	SPARE	48						49	SPARE	49	SPARE	49						50	SPARE	50	SPARE	50
REFERENCE	X1 CT CKT.	REFERENCE	X2 VT CKT.	REFERENCE	X42 DC CKTS.	REFERENCE	X52 CONTROL & PROTIN CKTS.	REFERENCE	X9 SPARE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
421/C5	1	422/B6	1	416/B3	1	416/F7	1	495/E1	1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
421/C5	2	422/B6	2	416/B3	2	416/F7	2	495/E2	2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
421/C5	3	422/C6	3	416/C3	3	431/D4	3	495/E3	3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
421/C5	4	422/C6	4	416/C3	4	431/D4	4	495/E3	4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
421/D5	5	SPARE	5	416/C3	5	431/D5	5	495/E5	5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
421/D5	6			416/C3	6	431/D6	6	495/E5	6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
421/D5	7			432/A2	7	431/D6	7	495/E6	7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
421/D5	8			432/F2	8	431/D7	8	495/E6	8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
421/E5	9			443/A4	9	431/D8	9	495/E7	9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
SPARE	10			443/F4	10	432/C4	10	495/E8	10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
				SPARE	11	432/C4	11	495/E8	11																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					12	443/F2	12	495/E8	12																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					13	SPARE	13	495/E9	13																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					14	491/A4	14	495/E9	14																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					15	491/C4	15	SPARE	15																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					16	491/E4	16	SPARE	16																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					17	491/A6	17	SPARE	17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					18	491/C6	18	SPARE	18																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					19	491/A7	19	SPARE	19																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					20	491/C7	20	SPARE	20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					21	491/A8	21	SPARE	21																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					22	491/B8	22	SPARE	22																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					23	491/A10	23	SPARE	23																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					24	443/B10	24	SPARE	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					25	SPARE	25	SPARE	25																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					26	492/B2	26	SPARE	26																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					27	492/D2	27	SPARE	27																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					28	492/B3	28	SPARE	28																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					29	492/D3	29	SPARE	29																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					30	492/B4	30	SPARE	30																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					31	492/D4	31	SPARE	31																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					32	492/B5	32	SPARE	32																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					33	492/B6	33	SPARE	33																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					34	492/D6	34	SPARE	34																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					35	492/B7	35	SPARE	35																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					36	492/D8	36	SPARE	36																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					37	492/B9	37	SPARE	37																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					38	492/D9	38	SPARE	38																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					39	492/A7	39	SPARE	39																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					40	492/A10	40	SPARE	40																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					41	492/B7	41	SPARE	41																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					42	SPARE	42	SPARE	42																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					43	SPARE	43	SPARE	43																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					44	SPARE	44	SPARE	44																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					45	SPARE	45	SPARE	45																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					46	SPARE	46	SPARE	46																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					47	SPARE	47	SPARE	47																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					48	SPARE	48	SPARE	48																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					49	SPARE	49	SPARE	49																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					50	SPARE	50	SPARE	50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
B																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
C	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:15%;">REFERENCE</td> <td style="width:15%;">XTJ T.JACK</td> <td style="width:15%;">REFERENCE</td> <td style="width:15%;">X3 AC CKT.</td> <td style="width:15%;">REFERENCE</td> <td style="width:15%;">X62 ALM. CKT.</td> <td style="width:15%;">REFERENCE</td> <td style="width:15%;">XSH SPACE HEATER</td> <td style="width:15%;">REFERENCE</td> <td style="width:15%;">X6 ALM. CKT.</td> </tr> <tr><td>411/C3</td><td>1</td><td>411/A3</td><td>1</td><td>412/E5</td><td>1</td><td>412/E6</td><td>1</td><td>412/C5</td><td>1</td></tr> <tr><td>411/C3</td><td>2</td><td>411/B3</td><td>2</td><td>412/E5</td><td>2</td><td>412/E6</td><td>2</td><td>412/C5</td><td>2</td></tr> <tr><td>411/D3</td><td>3</td><td>411/C3</td><td>3</td><td>494/E3</td><td>3</td><td>412/E6</td><td>3</td><td>495/E2</td><td>3</td></tr> <tr><td>411/D3</td><td>4</td><td>411/B3</td><td>4</td><td>494/E4</td><td>4</td><td>494/E7</td><td>7</td><td></td><td></td></tr> <tr><td>SPARE</td><td>5</td><td>411/C3</td><td>5</td><td>494/E5</td><td>5</td><td>494/E8</td><td>8</td><td></td><td></td></tr> <tr><td></td><td></td><td>411/B3</td><td>6</td><td>494/E6</td><td>6</td><td>SPARE</td><td>9</td><td></td><td></td></tr> <tr><td></td><td></td><td>411/B3</td><td>7</td><td>494/E7</td><td>7</td><td>SPARE</td><td>10</td><td></td><td></td></tr> <tr><td></td><td></td><td>SPARE</td><td>8</td><td>494/E8</td><td>8</td><td>SPARE</td><td>11</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td>9</td><td>SPARE</td><td>9</td><td>SPARE</td><td>12</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td>10</td><td>SPARE</td><td>10</td><td>SPARE</td><td>13</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td>11</td><td>SPARE</td><td>11</td><td>SPARE</td><td>14</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td>12</td><td>SPARE</td><td>12</td><td>SPARE</td><td>15</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td>13</td><td>SPARE</td><td>13</td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td>14</td><td>SPARE</td><td>14</td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td>15</td><td>SPARE</td><td>15</td><td></td><td></td><td></td><td></td></tr> </table>										REFERENCE	XTJ T.JACK	REFERENCE	X3 AC CKT.	REFERENCE	X62 ALM. CKT.	REFERENCE	XSH SPACE HEATER	REFERENCE	X6 ALM. CKT.	411/C3	1	411/A3	1	412/E5	1	412/E6	1	412/C5	1	411/C3	2	411/B3	2	412/E5	2	412/E6	2	412/C5	2	411/D3	3	411/C3	3	494/E3	3	412/E6	3	495/E2	3	411/D3	4	411/B3	4	494/E4	4	494/E7	7			SPARE	5	411/C3	5	494/E5	5	494/E8	8					411/B3	6	494/E6	6	SPARE	9					411/B3	7	494/E7	7	SPARE	10					SPARE	8	494/E8	8	SPARE	11						9	SPARE	9	SPARE	12						10	SPARE	10	SPARE	13						11	SPARE	11	SPARE	14						12	SPARE	12	SPARE	15						13	SPARE	13								14	SPARE	14								15	SPARE	15																																																																																																																																																																																																																																																																																																																																																																		
REFERENCE	XTJ T.JACK	REFERENCE	X3 AC CKT.	REFERENCE	X62 ALM. CKT.	REFERENCE	XSH SPACE HEATER	REFERENCE	X6 ALM. CKT.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
411/C3	1	411/A3	1	412/E5	1	412/E6	1	412/C5	1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
411/C3	2	411/B3	2	412/E5	2	412/E6	2	412/C5	2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
411/D3	3	411/C3	3	494/E3	3	412/E6	3	495/E2	3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
411/D3	4	411/B3	4	494/E4	4	494/E7	7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
SPARE	5	411/C3	5	494/E5	5	494/E8	8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
		411/B3	6	494/E6	6	SPARE	9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
		411/B3	7	494/E7	7	SPARE	10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
		SPARE	8	494/E8	8	SPARE	11																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
			9	SPARE	9	SPARE	12																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
			10	SPARE	10	SPARE	13																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
			11	SPARE	11	SPARE	14																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
			12	SPARE	12	SPARE	15																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
			13	SPARE	13																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
			14	SPARE	14																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
			15	SPARE	15																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
D																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
E																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
F																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF National Grid SA. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		TERMINAL BLOCKS PANEL +R01.2		 نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid SA	
		DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>				132kV UGF-8710 RELAY PANEL-2 +R03.2			
		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____				S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.	
00 13 04		FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		- C421 CD-322919 501 NIL 00	
REV. NO. DATE DESCRIPTION									